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VOLUME 21 NUMBER 63

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TITLE 5—ADMINISTRATIVE PERSONNEL

Chapter I—Civil Service Commission

PART 6—EXCEPTIONS FROM COMPETITIVE SERVICE

DEPARTMENT OF COMMERCE

In Federal Register Document 56-2292, filed March 26, 1956, paragraph (m) (1) and (2) of § 6.112 should have been designated as paragraph (k) (2) and (3) as set out below.

§ 6.112 *Department of Commerce.* * * *

(k) *Weather Bureau.* * * *

(2) Until December 31, 1960, Meteorologist Aid and Electronic Technician positions on Guam, Canton Island, Samoa, Wake Island, and in the Trust Territory.

(3) Cook positions on Swan Island.

(R. S. 1753, sec. 2, 22 Stat. 403; 5 U. S. C. 631, 633)

UNITED STATES CIVIL SERVICE COMMISSION,
[SEAL] WM. C. HULL,
Executive Assistant.

[F. R. Doc. 56-2439; Filed, Mar. 30, 1956; 8:53 a. m.]

PART 34—APPOINTMENT, COMPENSATION, AND REMOVAL OF HEARING EXAMINERS

SUBPART A—GENERAL PROVISIONS

Subpart A of Part 34 is amended as set out below.

Sec.
34.1 Coverage.
34.2 Definitions.
34.3 Appointments.
34.4 Promotion.
34.5 Reassignment.
34.6 Transfer.
34.7 Reinstatement.
34.8 Restoration.
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34.10 Compensation.
34.11 Performance ratings.
34.12 Rotation of examiners.
34.13 Utilization of examiners of other agencies.
34.14 Separations.
34.15 Reductions in force.

AUTHORITY: §§ 34.1 to 34.15 issued under sec. 11, 60 Stat. 244, as amended; 5 U. S. C. 1010.

§ 34.1 *Coverage.* (a) The regulations in this part shall be applicable to persons appointed under section 11 of the Administrative Procedure Act for proceedings pursuant to sections 7 and 8 of that act, and to hearing examiner positions.

(b) Except as otherwise provided in the regulations in this part, the rules and regulations applicable to positions in the competitive service shall apply to hearing examiner positions.

§ 34.2 *Definitions.* The following terms are defined as they are used in this part:

(a) *Agency.* Agency means an agency subject to the Administrative Procedure Act as defined in that act.

(b) *Detail.* Detail means the temporary assignment of an employee from one position to another position without change in his civil-service or pay status. The assignment to a hearing examiner of a case of the level of difficulty that would ordinarily be assigned to a hearing examiner of a different grade does not of itself constitute a detail within the meaning of this part.

(c) *Hearing examiner position.* A hearing examiner position is one in which any portion of the duties includes those prescribed by the Administrative Procedure Act for presiding officers appointed under section 11 thereof.

(d) *Promotion.* Promotion means a change in grade from one position to a higher graded position, whether newly created, or left vacant because of promotion, demotion, transfer, reassignment, retirement, separation of last incumbent, or change resulting from the assignment of higher grade work than the work of the position to which the examiner was absolutely appointed.

(e) *Reinstatement.* Reemployment authorized on the basis of the appointee's absolute status as hearing examiner after separation from a hearing examiner position.

(f) *Removal.* Removal means any involuntary change in the status of a hearing examiner including demotion, reassignment, removal, and suspension as defined in § 1.102 of this chapter, and promotion.

§ 34.3 *Appointments*—(a) *Prior approval.* No appointement to a hearing examiner position except one made by

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FEDERAL REGISTER

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selection from a certificate of eligibles furnished by the Commission shall be made without the prior approval of the Commission. All appointments will be subject to security clearance by the agency.

(b) *Probationary and career-conditional periods.* The requirements of probationary and career-conditional periods before absolute appointment shall not apply to appointments to hearing examiner positions.

(c) *Appointment of incumbents of newly classified hearing examiner positions.* An employee who is serving in a position which is classified as a hearing examiner position on the basis of legislation, Executive order, or decision of a court after June 11, 1947, may be appointed as a hearing examiner if:

(1) He has a competitive status or was serving in an excepted position under a permanent appointment;

(2) He was serving in the position on the date of the legislation, Executive order, or decision of the court on which the classification of the position is based;

(3) A recommendation for his appointment is received by the Commission from the agency concerned not later than six (6) months after classification of the position as a result of the legislation, Executive order, or decision of the court; and

(4) His qualifications for the position are approved by the Commission.

In emergency situations, when the needs of the service require it, the Commission will authorize conditional appointments of employees pending final decision on their eligibility for absolute appointment under this paragraph.

(d) *Appointment of legislative and judicial employees.* A former employee of the legislative or judicial branch may be appointed to a hearing examiner position after passing such suitable noncompetitive examination as the Commission may prescribe, if he is otherwise eligible under the provisions of section 2 (b) or (c) of the Ramspeck Act of November 26, 1940, as amended.

(e) *Appointment of incumbents of nonhearing examiner positions.* Except as provided in paragraphs (c) and (d) of this section, no employee who is serving in a position other than a hearing examiner position may be appointed to a hearing examiner position except by selection from a certificate of eligibles furnished by the Commission from the open competitive register.

§ 34.4 *Promotion.* (a) When the Commission classifies an occupied hearing examiner position at a higher grade, the Commission will determine which hearing examiner shall be promoted to the higher grade.

(b) When a hearing examiner position becomes vacant, the agency may elect to fill the vacancy by the promotion of one of its hearing examiners. The Commission will determine which hearing examiner shall be promoted. Once an agency elects to have a vacant hearing examiner position filled by promotion, the hearing examiner designated by the Commission must be promoted.

(c) Promotions will be effective on the date specified by the Commission.

(d) The Commission will, as necessary, establish and maintain registers (to be known as promotion registers) of hearing examiners who are eligible for promotion to higher grade hearing examiner positions in their agency. Names of hearing examiners will be entered on the promotion registers in accordance with ratings which shall be assigned on the basis of the experience and training requirements of the open competitive examination. The Commission will direct the promotion of the examiner whose name is at the top of the appropriate promotion register.

(e) Each promotion register will be rerated at least biennially.

§ 34.5 *Reassignment.* Hearing examiners who are serving under absolute appointments may be reassigned from one hearing examiner position to another hearing examiner position with the prior approval of the Commission on a noncompetitive basis in accordance with regular civil service procedures.

§ 34.6 *Transfer.* (a) Section 34.4 (b) through (e) shall apply to the transfer of a hearing examiner that involves a promotion. The hearing examiner concerned shall be rated as provided in § 34.4 and his transfer and promotion shall be approved only if his rating is such that his name would be at the top of the appropriate promotion register.

(b) Transfers from one hearing examiner position to another hearing examiner position which do not involve promotions may be made with the prior approval of the Commission on a noncompetitive basis in accordance with regular civil service procedures.

§ 34.7 *Reinstatement.* (a) Section 34.4 (b) through (e) shall apply to the reinstatement of a former hearing examiner who acquired absolute status as a hearing examiner under the Administrative Procedure Act, if the position to be filled is at a higher grade than the former hearing examiner once occupied. The former hearing examiner shall be rated as provided in that section and his reinstatement shall be approved only if his rating is such that his name would be at the top of the appropriate promotion register.

(b) The reinstatement of a person who has a reinstatement status and who last served with absolute status as a hearing examiner under the Administrative Procedure Act at the same grade or in a higher grade than the position to be filled may be made with the prior approval of the Commission on a noncompetitive basis in accordance with regular civil-service procedures.

§ 34.8 *Restoration.* The regulations in Parts 10 and 35 of this chapter governing reemployment after transfer and restoration after active military duty shall apply to reemployment and restoration to hearing examiner positions.

§ 34.9 *Details.* Employees serving in positions other than hearing examiner positions may not be detailed to hearing examiner positions. Details from one hearing examiner position to another hearing examiner position in a higher grade may be made only after the prior written approval of the Commission.

§ 34.10 *Compensation.* (a) Hearing examiner positions shall be classified by the Commission in accordance with the regulations and procedures adopted by the Commission for classifications under the Classification Act of 1949, as amended. Classifications shall be made independently of agency recommendations and ratings.

(b) Hearing examiners shall be eligible for salary step increases in accordance with Subpart A of Part 25 of this chapter: *Provided,* That the requirement of a satisfactory or better performance rating shall not apply.

§ 34.11 *Performance ratings.* Agencies shall not rate the performance of hearing examiners.

§ 34.12 *Rotation of examiners.* Insofar as practicable, examiners shall be assigned in rotation to cases of the level of difficulty and importance that are normally assigned to positions of the salary grade they hold.

§ 34.13 *Utilization of examiners of other agencies.* (a) At the request of agencies occasionally or temporarily insufficiently staffed, the Commission will arrange, if possible, for the temporary utilization by those agencies of the services of hearing examiners of other agencies.

(b) Agencies, by agreement between themselves, may arrange for the temporary utilization by one agency of a hearing examiner or hearing examiners of another agency. Such agreements must have the prior approval of the Commission before being put into effect.

§ 34.14 *Separations*—(a) *Removals.* Hearing examiners shall be subject to removal by the agencies in which they are employed only for good cause, established and determined by the Commission, after opportunity for a hearing and upon the record thereof as provided in Subpart B of this part.

(b) *Status during removal proceedings.* In exceptional cases where there are circumstances by reason of which the retention of a hearing examiner in his position, pending adjudication of the existence of good cause for his removal, would be detrimental to the interest of the Government, agencies shall either assign the hearing examiner to duties in which these conditions would not exist or place him on annual leave for the period that will be covered by the annual leave to his credit. Action under this paragraph may be taken only with the prior approval of the Commission.

(c) *Exceptions from procedures.* The procedures in this part governing the removal of hearing examiners shall not apply in making dismissals requested by the Commission under § 05.4 of this chapter, nor to dismissals made by agencies in the interest of national security under Executive Order No. 10450 of April 27, 1953, as amended (18 F. R. 2489), and the act of August 26, 1950 (64 Stat. 476).

§ 34.15 *Reductions in force*—(a) *Retention credits.* Retention credits for purposes of reductions in force of hearing

examiners are credits for length of Federal Government service.

(b) *Determination of tenure groups.* For the purpose of determining relative retention preference in reductions in force, hearing examiners shall be classified according to tenure of employment and veteran preference in groups and subgroups in the manner prescribed in § 20.4 (c) of the Retention Preference Regulations for Use in Reductions in Force (Part 20 of this chapter): *Provided,* That, inasmuch as hearing examiners may not be given performance ratings, the distinction made in § 20.4 (c) of this chapter between employees with satisfactory or better performance ratings and employees with unsatisfactory performance ratings will not be applicable to hearing examiners.

(c) *Status of hearing examiners who are reached in reductions in force.* The name of a hearing examiner who has been separated, furloughed, or demoted from a hearing examiner position because of a reduction in force will, at his request and if he is qualified, be placed at the top of the open competitive hearing examiner register for the grade in which he last served and for all lower grades. Where more than one hearing examiner is affected, the qualifications of the several hearing examiners shall be rated by the Commission and relative standing at the top of the register will be on a basis of these ratings.

(d) *Retention Preference Regulations.* The Retention Preference Regulations for Use in Reductions in Force (Part 20 of this chapter), except as modified by this section, shall apply to reductions in the force of hearing examiners.

UNITED STATES CIVIL SERVICE COMMISSION,
[SEAL] WM. C. HULL,
Executive Assistant.

[F. R. Doc. 56-2438; Filed, Mar. 30, 1956; 8:53 a. m.]

TITLE 6—AGRICULTURAL CREDIT

Chapter V—Agricultural Marketing Service, Department of Agriculture

Subchapter B—Export and Domestic Consumption Programs

[Amdt. 3]

PART 517—FRUITS AND BERRIES, FRESH

SUBPART—CITRUS FRUIT EXPORT PROGRAM WMX135a

Section 517.463 (g) is hereby amended to read as follows:

(g) *Export shipment.* Fresh oranges shall be exported from other than U. S. North Atlantic and Canadian Atlantic Ports in refrigerated space on ocean carriers and the export bills of lading covering such shipments shall show that the oranges are stowed in refrigerated space. Fresh oranges may be exported from U. S. North Atlantic and Canadian Atlantic Ports in ventilated space on ocean carriers until April 15, 1956, inclusive, following which date export shipments from such ports shall be made in refrigerated space: *Provided,* That fresh Arizona Valencia oranges may be exported from U. S. North Atlantic and Canadian Atlantic Ports in ventilated space on ocean carriers until April 30, 1956, inclusive, following which date export shipments from such ports shall be made in refrigerated space: *And provided further,* That fresh California Valencia oranges may be exported from U. S. North Atlantic and Canadian Atlantic Ports in ventilated space on ocean carriers until July 15, 1956, inclusive, following which date export shipments from such ports shall be made in refrigerated space. "U. S. North Atlantic Ports" means United States seaports north of Cape Hatteras.

(Sec. 32, 49 Stat. 774, as amended; 7 U. S. C. 612c)

Effective date. This amendment shall be effective March 31, 1956.

Dated this 28th day of March 1956.

[SEAL] S. R. SMITH,
Authorized Representative of the Secretary of Agriculture.

[F. R. Doc. 56-2434; Filed, Mar. 30, 1956; 8:52 a. m.]

TITLE 7—AGRICULTURE

Chapter I—Agricultural Marketing Service (Standards, Inspections, Marketing Practices), Department of Agriculture

Subchapter C—Regulations and Standards Under the Farm Products Inspection Act

PART 55—GRADING AND INSPECTION OF EGG PRODUCTS

MISCELLANEOUS AMENDMENTS

Notice of a proposed amendment to the regulations governing the grading and inspection of egg products (7 CFR Part 55) was published in the FEDERAL REGISTER on March 14, 1956 (21 F. R. 1600). The amendment hereinafter promulgated is pursuant to authority contained in the Agricultural Marketing Act of 1946 (60 Stat. 1087; 7 U. S. C. 1621 et seq.).

The amendment changes slightly the character of shell eggs that are permitted to be included in product which bears the official inspection mark; changes the liquid cooling provisions to make them more practical and more in line with newer methods of processing egg products; and makes minor changes in the washing and sanitizing requirements applicable to the cleaning of equipment used in processing operations. Many of the changes are for the purpose of clarification.

It is hereby found that good cause exists for making this amendment effective April 1, 1956 for the reasons that (1) the egg processing season is now at hand and it is desirable that these program changes apply to the bulk of the processing season rather than have two different requirements covering a single season, (2) the changes will improve the inspection program, and (3) no additional time is required by interested persons to prepare for compliance with this amendment.

The amendment is as follows:

1. Change paragraph (h) of § 55.2 *Terms defined* to read as follows:

(h) "Eggs of current production" means shell eggs which have moved through usual marketing channels since the time they were laid, and have not been held in refrigerated storage in excess of 60 days, except that segregated checks and dirty eggs which have been held in excess of 7 days shall not be considered as "eggs of current production".

1a. Change the title of § 55.17 to read as follows: "§ 55.17 *Authority and duties of inspectors performing service on a resident inspection basis.*"

1b. Change the title of § 55.18 to read as follows: "§ 55.18 *Facilities to be furnished for use of graders and inspectors in performing service on a resident inspection basis.*"

1c. Change paragraph (b) of § 55.22 *How application may be made,* to read as follows:

(b) *On a resident inspection basis.* An application for continuous inspection on a resident inspection basis to be rendered in an official plant must be made in writing on forms approved by the Administrator and filed with the Administrator.

1d. Change paragraph (b) of § 55.27 *Suspension of plant approval,* to read as follows:

(b) During such period of suspension, inspection service shall not be rendered. However, the other provisions of the regulations pertaining to providing service on a resident basis will remain in effect unles service is terminated in accordance with the terms thereof. If the plant facilities or methods of operation are not brought into compliance within a reasonable period of time to be specified by the Administrator, the application and service shall be terminated. Upon termination of inspection service in an official plant pursuant to the regulations, the plant approval shall also become terminated and all labels, seals, tags or packaging material bearing official identification shall, under the supervision of a person designated by the Service, either be destroyed, or the official identification completely obliterated, or sealed in a manner acceptable to the Service.

2. Delete the last sentence of § 55.35 *Approval of official identification* and insert in lieu thereof the following: "The label shall contain the common or usual name of the product, if any there be, the name and address of the packer or distributor, and when the name of the distributor is shown, it shall be qualified by such term as 'packed for,' 'distributed by,' or 'distributors,' the lot number, a statement of the net contents of the container, and if the product is comprised of two or more ingredients such ingredients shall be listed in the order of descending proportions. Effective on and after July 1, 1956, egg products that are labeled 'Whites and yolks' shall have the total solids content declared on the label if the solids content is less than 25½ percent."

3. Change § 55.37 *Products that may bear the inspection mark* to read as follows:

§ 55.37 *Products that may bear the inspection mark.* Egg products which are permitted to bear the inspection mark shall be processed in an official

plant from edible shell eggs of current production or other egg products which bear the inspection mark, and may contain other edible ingredients.

4. Change § 55.39 to read as follows:

§ 55.39 *Products which may bear other official identification.* Egg products which are produced in an official plant from edible shell eggs of other than current production or from other egg products which bear the rectangular mark set forth in Figure 3 of § 55.38, or shell eggs or egg products described in § 55.37, may bear the identification mark illustrated in Figure 3 of § 55.38 and such products may contain other edible ingredients. None of such products may bear the inspection mark illustrated in Figures 1 and 2 of § 55.36. After freezing and prior to shipping such products shall be drilled and inspected organoleptically by a grader of frozen eggs and those products which are in satisfactory condition may bear the identification set forth in Figure 3 of § 55.38.

4a. Delete the word "contract" in § 55.46 *Grading certificate issuance,* and substitute in lieu thereof the word "resident".

4b. Change the second sentence of § 55.62 *Fees for appeal grading,* to read as follows: "If the fee on the certificate from which the appeal is taken is based on the provisions of § 55.68, then the fee for such appeal grading shall be double the amount specified in § 55.65 (a) (1) for the applicable volume of product appeal graded."

5. Change subparagraph (1) of paragraph (a) of § 55.65 *Egg products grading and inspection fees* to read as follows:

(a) *Frozen eggs*—(1) *Inspection for condition only.*

	Fee
For 15 packages or less	$2.00
For 16 to 50 packages, inclusive	3.00
For each additional 100 packages, or fraction thereof, in excess of 50 packages	1.00
When each individual package in any lot is inspected for condition only, the fee for each package inspected shall be	.20

6. Change § 55.68 *On a contract basis* to read as follows:

§ 55.68 *On a resident inspection basis*—(a) *Charges.* The charges for grading and inspection of egg products shall be paid by the applicant for the service and shall include such of the items listed in this section as are applicable. Payment for the full cost of the grading and inspection service rendered to the applicant shall be made by the applicant to the Agricultural Marketing Service, United States Department of Agriculture (hereinafter referred to as "AMS") not later than fifteen (15) days from the date of billing. Such full costs shall comprise such of the items listed in this section as may be due and may be included, from time to time, in the bill or bills covering the period or periods during which the grading and inspection service may be rendered. A charge will be made by AMS in the amount of one (1) percent per month or fraction thereof of any amounts remaining unpaid after thirty (30) days from the date of bill.

(1) A charge of $75 for the initial survey and examination of blue prints of the designated plant and its premises prior to the performance, by AMS, of the grading and inspection service.

(2) A charge of $100 for the final survey and inauguration of the grading and inspection service including the assignment of one grader or inspector and one alternate grader or inspector, provided they are installed at the same time.

(3) A charge of $50 for each additional grader or inspector or replacement of a previously assigned grader or inspector to the designated plant: *Provided,* That, in the sole discretion of the Service no such charge will be made for a replacement when such replacement is made by the use of a regular employee of the Service, or when the replacement is made necessary by the transfer of an employee of the Service for the sole benefit of the Service.

(4) A charge equal to the salary cost paid to each grader assigned to the applicant's plant by AMS including an amount for annual leave and sick leave; *Provided,* That, no charge is to be made for salary cost for any assigned grader or inspector of the designated plant while temporarily reassigned by AMS to perform grading service for other than the applicant, except when the assigned grader is performing inspections for the Department of Defense on products accepted for delivery by the applicant to the Department of Defense, in which case the applicant will be given credit for the service rendered based on a formula concurred in jointly by the Departments of Defense and Agriculture.

(5) A charge equal to the salary cost, travel expenses and per diem paid by AMS to any grader or inspector whose services are required for relief purposes when regular graders or inspectors are on annual leave or sick leave.

(6) A charge for the actual cost to AMS of any travel or per diem incurred by each grader or inspector assigned to the plant while in the performance of grading or inspection service rendered the applicant.

(7) A charge, at the sole discretion of AMS of an amount not in excess of the actual cost to AMS of the travel (including the cost of movement of household goods and dependents) and per diem with respect to each grader or inspector who is transferred from an official station to the designated plant.

(8) A charge, included in salary cost, equal to the Employer's tax imposed under the United States Internal Revenue Code (26 U. S. C.) for Old Age and Survivors Benefits under the Social Security System, and an amount equal to the cost to AMS for insurance as provided in the Federal Employees' Group Life Insurance Act of 1954.

(9) An administrative service charge based upon the aggregate weight of the total monthly volume (based on the weight of liquid egg and weight of dried egg converted to liquid egg) of all egg products handled in the plant, and computed in accordance with the following table:

COMPUTATION OF ADMINISTRATIVE SERVICE CHARGES

0 to 20,000 pounds	$25.00
20,001 to 100,000 pounds	38.00
100,001 to 150,000 pounds	42.75
150,001 to 200,000 pounds	47.50
200,001 to 250,000 pounds	52.25
250,001 to 300,000 pounds	57.00
300,001 to 400,000 pounds	61.75
400,001 to 500,000 pounds	66.50
500,001 to 600,000 pounds	71.25
600,001 to 700,000 pounds	76.00
700,001 to 800,000 pounds	80.75
800,001 to 900,000 pounds	85.50
900,001 to 1,000,000 pounds	90.25
1,000,001 pounds and over	95.00

(10) A charge of $5 per hour plus actual cost to AMS for per diem and travel cost incurred in rendering service not specifically covered in this section such as surveys in addition to the initial and final.

(11) A charge equal to 7 percent of the salary paid by AMS to each grader or inspector exclusive of one regular grader or inspector whose salary is paid by AMS.

(b) *Other provisions.* (1) The applicant shall designate in writing the employees of the applicant who will be required and authorized to furnish each grader or inspector with such information as may be necessary for the performance of the grading and inspection service.

(2) AMS will provide as available an adequate number of graders or inspectors to perform the grading and inspection service.

(3) At the sole discretion of AMS, graders or inspectors may be either Federal or State employees or licensed employees of the applicant.

(4) The grading and inspection service shall be provided at the designated plant and shall be continued until the service is suspended, withdrawn, or terminated by

(i) Mutual consent;

(ii) Thirty (30) days written notice, by either the applicant or AMS specifying the date of suspension, withdrawal, or termination;

(iii) One (1) day's written notice by AMS to the applicant if the applicant fails to honor any invoice within thirty (30) days after date of invoice covering the cost of the grading and inspection service; or

(iv) Termination of the services pursuant to the provisions of the following subdivision (v) of this subparagraph:

(v) Grading and inspection services shall be terminated by AMS at any time AMS, acting pursuant to any applicable laws, rules and regulations, debars the applicant from receiving any further benefits of the service.

(5) Federally employed graders or inspectors will be required to confine their activities to those duties necessary in the rendering of grading and inspection service and such closely related activities as may be approved by AMS; *Provided,* That, in no instance will the Federally employed grader or inspector assume the duties of management.

7. Change paragraph (m) of § 55.77 *General operating procedures* to read as follows:

(m) All utensils and equipment, except the drying units and in case of albumen driers, the powder conveyors, mechanical powder coolers, blenders and drying unit, shall be cleaned and sanitized at the start of each day's processing operations and, except as otherwise provided in § 55.83 (z), at the resumption of processing operations following any cessation of such operations for 30 minutes or longer. All such equipment and utensils shall be kept clean and sanitary during all processing operations.

8. Change paragraph (e) of § 55.78 *Candling room facilities,* to read as follows:

(e) Leaker trays shall be made of a material and of such design that is conducive to easy cleaning and sanitizing.

9. Change paragraph (c) of § 55.79 *Candling room operations* to read as follows:

(c) Wooden spools on mechanical candling machines shall be maintained in a clean condition during operation.

10. Change § 55.79 (d) to read as follows:

(d) Containers for trash and inedible eggs shall be removed from the candling room as often as necessary but at least once daily; and shall be cleaned and treated in such a manner as will avoid off odors or create objectionable conditions in the plant.

11. Delete subparagraphs (4), (5), and (6) of paragraph (g) of § 55.79 *Candling room operations* and substitute in lieu thereof, the following:

(4) All loss or inedible eggs shall be placed in a designated container and be handled as required in § 55.77 (c). Inedible and loss eggs, for the purposes of this section and § 55.83, are defined to include black rots, white rots, mixed rots, eggs with diffused blood in the albumen or on the yolk, crusted yolks, stuck yolks, developed embryos at or beyond the blood-ring stage, sour and musty eggs, and any other filthy and decomposed eggs including the following:

(i) Any egg with visible foreign matter, other than removable blood and meat spots, in the egg meat.

(ii) Any egg with a sizable portion of the shell and shell membrane missing and with egg meat adhering to the outside of the shell.

(iii) Any dirty egg with cracks in the shell and shell membrane and with the contents exuding freely.

(iv) Any egg with a large portion of the membrane and shell missing so that the egg, in effect, is a smashed egg.

(v) Any egg with conditions which make washing or breaking without contaminating the contents impossible.

(vi) Open leakers made in the washing operation prior to removal from the machine.

(5) Edible eggs include all eggs which are fit for human food and which are not defined as inedible or loss in subparagraph (4) of this paragraph. Edible eggs include eggs from which blood spots (localized clots of blood which can be removed readily) have been removed.

12. Change paragraphs (a) and (b) of § 55.81 *Egg cleaning operations* to read as follows:

(a) All shell eggs with adhering dirt shall be cleaned prior to breaking. If such eggs are washed, they shall be rinsed with a water spray and promptly dried. Such eggs may be immersed in or sprayed with a sanitizing solution immediately following the water rinse, and thereafter promptly dried prior to breaking.

(b) Temperature of the wash water shall be at least 20° F. higher than the temperature of the eggs to be washed.

13. Change paragraph (e) of § 55.82 to read as follows:

(e) There shall be provided adequate hand washing facilities which are easily accessible to all breaking personnel, an adequate supply of warm water, clean towels or other facilities for drying hands, odorless soap, and containers for used towels. Hand washing facilities shall be operated by other than hand operated controls.

14. Change paragraph (h) of § 55.82 to read as follows:

(h) Conveyors for shell eggs shall be so constructed as will permit them to be operated in a clean and sanitary manner.

15. Delete paragraphs (j) through (p) of § 55.82 and substitute, in lieu thereof, the following:

(j) All liquid-egg containers, including cups, buckets, pipes, pumps and other equipment which come in contact with liquid eggs, shall be made of approved materials and shall be free from leaks, excessive dents, rust spots and those seams which make cleaning difficult.

(k) Frozen egg containers are not acceptable as liquid-egg buckets.

(l) An inspection station shall be provided for the examination of egg liquid requiring special inspection. A suitable container bearing an identifying mark shall be placed near the inspection station for disposal of rejected liquid.

(m) Strainers, settling tanks, or centrifugal clarifiers of approved construction shall be provided for the effective removal of shell particles, and foreign material, unless specific approval is obtained from the National Supervisor for other mechanical devices.

(n) Separate churn or draw-off rooms, if provided, shall meet requirements that are comparable to those listed under this section.

(o) In the processing of whole eggs or albumen, hashers may be used when preceded by an approved settling tank or strainer, or followed by a centrifugal clarifier.

16. Change paragraph (c) of § 55.83 *Breaking room operations* to read as follows:

(c) Shell egg conveyors shall be maintained in a sanitary condition while in operation.

17. Change paragraphs (e), (f) and (g) of § 55.83 to read as follows:

(e) Paper towels or tissues shall be used at breaking tables, and shall not be reused. Cloth towels are not permitted.

(f) Breakers shall use a complete set of clean equipment when starting work and after lunch periods. All table equipment shall be rotated with clean equipment every 2 hours.

(g) Cups shall not be filled to overflowing.

18. Change paragraph (i) of § 55.83 to read as follows:

(i) Shell particles, meat and blood spots and other foreign material accidentally falling into the cups or trays shall be removed. Breakers shall keep their fingers out of the cups, trays, pails and cans at all times.

19. Change paragraphs (j) and (k) of § 55.83 to read as follows:

(j) Whenever an inedible egg is broken, the affected breaking equipment shall be replaced with a complete set of clean equipment, except that only the cup need be exchanged when bloody whites or blood rings are encountered.

(k) Inedible and loss eggs as defined in § 55.79 (g) (4), apply to this section.

20. Change the first sentence of paragraph (n) of § 55.83 to read as follows:

(n) All inedible egg liquid must be placed in a clearly identified container containing a denaturant. * * *

21. Change paragraphs (q) and (r) of § 55.83 to read as follows:

(q) Edible leakers and checks which are liable to be smashed in the breaking operation shall be broken at a separate station by specially trained personnel.

(r) All egg liquid and ingredient containers and additives such as salt, sugar, and syrups shall be handled in a clean and sanitary manner.

22. Change paragraphs (v), (w), and (x) of § 55.83 to read as follows:

(v) Shell egg containers whenever dirty shall be cleaned and drained; and shall be cleaned, sanitized, and drained at the end of each shift.

(w) Belt type shell egg conveyors shall be cleaned and sanitized whenever processing operations have ceased for 30 minutes or longer and shall be cleaned and sanitized at the end of each shift in addition to continuous cleaning during operation.

(x) Cups, knives, racks, separators, trays, spoons, liquid-egg pails, and other breaking receptacles shall be cleaned and sanitized at least every 2 hours. At the end of a shift, this equipment shall be cleaned and immediately prior to use again it shall be immersed in a sanitizing solution and drained.

23. Change paragraph (z) of § 55.83 to read as follows:

(z) Dump tanks, draw-off tanks, low pressure liquid egg lines and surface, tubular, or plate coolers shall be flushed whenever processing operations have ceased for 30 minutes or longer, except when such equipment is used exclusively for preparing blends and mixes of egg products with added ingredients, in which case said equipment shall be flushed whenever processing operations have ceased for 60 minutes or longer. All such equipment, unless cleaned by

acceptable in-place cleaning methods, shall be dismantled, cleaned and sanitized after each shift and shall not be reassembled more than 2 hours prior to use. Such equipment shall be flushed with a sanitizing solution for at least one minute prior to placing in use.

24. Change paragraph (aa) of § 55.83 to read as follows:

(aa) Strainers, clarifiers, and other devices used for removal of shell particles and other foreign material shall be cleaned and sanitized each time it is necessary to change such equipment, but at least once each 4 hours of operation, and unless gauges are installed which indicate satisfactory operation, pressure strainers shall be cleaned and sanitized at least once each 2 hours of operation.

25. Delete paragraphs (dd) through (ll) of § 55.83 and substitute, in lieu thereof, the following paragraphs:

(dd) Liquid egg holding vats and containers (including tank trucks) used for transporting liquid eggs shall be cleaned after each use. Such equipment shall be clean and shall be sanitized immediately prior to placing in use.

(ee) Tables, shell conveyors and containers, and containers for inedible egg liquid shall be cleaned and sanitized at the end of each shift.

(ff) Mechanical egg breaking equipment shall be flushed with clean water under pressure at lunch periods and shall be thoroughly cleaned and sanitized at the end of each shift.

(gg) All frozen egg products prepared under the Egg Products Inspection Service in official plants shall be examined by organoleptic examination after freezing to determine their fitness for human food. Any such products which are found to be unfit for human food shall be denatured and any official identification mark which appears on any container thereof shall be removed or completely obliterated.

26. Change § 55.85 *Liquid cooling operations* to read as follows:

§ 55.85 *Liquid cooling operations.* (a) Liquid-egg storage rooms, including surface cooler and holding tank room, shall be kept clean, free from objectionable odors and condensation.

(b) All shell eggs shall be precooled to temperatures which will produce liquid eggs at a temperature so that the liquid egg at no time during processing, other than while stabilizing or pasteurizing, will exceed 70° F.

(c) All product which is not subjected to immediate stabilization or pasteurization or is not cooled to 45° F. or less within 1½ hours from time of breaking shall be moved directly and continuously into a sharp freezer maintained at such temperature and with such air circulation as will cool the product to 45° F. or less, within approximately 2 hours.

(d) Liquid egg, other than whites, held for shipment in liquid form, drying, stabilization or pasteurization or which is not moved directly into a freezer shall be cooled to 45° F. within 1½ hours from time of breaking and maintained at temperatures not exceeding 45° F. until loaded for shipment, or until stabilizing or pasteurizing are begun, or until frozen or dried, or delivered to the consumer. Such liquid eggs if to be held for more than 8 hours shall be reduced to a temperature of less than 40° F. within 1½ hours from time of breaking and held at that temperature or less until stabilizing or pasteurizing operations are begun, or until dried, or frozen, or delivered to the consumer.

(e) Stabilized liquid eggs shall be cooled to 45° F. or less unless immediately dried or pasteurized following stabilization. The cooling process shall be started immediately following stabilization and be completed within 3 hours.

(f) Pasteurized liquid egg shall be continuously cooled to 45° F. or less, unless dried or stabilized immediately following pasteurization.

(g) Liquid whites that are to be stabilized by removal of glucose and dried shall be held at a temperature not exceeding 70° F., provided the stabilization process is begun within 8 hours from time of breaking. If to be held longer than 8 hours prior to stabilization, the liquid whites shall be cooled immediately after breaking to 55° F., and held at that temperature or lower until stabilizing is begun. Drying will be carried out as soon as possible after the removal of the glucose and the capacity of the drier shall be sufficient to handle the volume of product stabilized so that the storage of stabilized liquid white will not be necessary as a regular operating procedure, except as necessary to provide for emergencies and to provide for continuous operations provided the liquid is cooled to 40° F. or lower, immediately following stabilization and maintained at such temperatures until dried.

(h) Compliance with temperature requirements applying to liquid eggs shall be considered as satisfactory only if the entire mass of the liquid meets the requirements.

(i) Surface coolers must be kept covered at all times unless located in a separate room maintained under sanitary conditions.

(j) Agitators shall be operated in such a manner as will minimize the production of foam.

(k) When ice is used as an emergency refrigerant, by being placed directly into the egg meat, the source of the ice must to certified by the local or State Board of Health. Such liquid shall not be frozen and identified with the Department legend, but it may be dried and so identified. All ice shall be handled in a sanitary manner.

27. Delete paragraph (d) of § 55.89 *Defrosting facilities.*

28. Change paragraph (a), and the introductory paragraph and subparagraph (2) of paragraph (d) of § 55.90 *Defrosting operations,* to read as follows:

(a) Frozen whole eggs, whites and yolks, and yolks shall be turned into a liquid state in a sanitary manner as quickly as possible after the defrosting process has begun.

* * * * *

(d) Frozen whole eggs, whites and yolks, and yolks may be tempered or partially defrosted for not to exceed 48 hours at a room temperature no higher than 40° F., or not to exceed 24 hours at a room temperature above 40° F.: *Provided,* That no portion of the defrosted liquid shall exceed 50° F. while in or out of the container.

* * * * *

(2) The defrosted liquid shall be held at 40° F. or less, except in the case of the product to be pasteurized or stabilized by glucose removal as provided in § 55.85. Defrosted liquid shall not be held more than 16 hours prior to drying.

29. Change paragraph (i) of § 55.91 *Spray process drying facilities* to read as follows:

(i) Sifters of approved construction and sifting screens shall be no coarser than the opening size specified for No. 16 mesh (U. S. Bureau of Standards). Sifters must be so constructed that accumulations of large particles or lumps of dried eggs can be removed continuously while the sifters are in operation.

30. Change paragraph (c) of § 55.92 *Spray process drying operations* to read as follows:

(c) Low pressure liquid egg lines, high pressure pumps, low pressure pumps, homogenizers and pasteurizers, unless cleaned by acceptable in-place cleaning methods, shall be dismantled and cleaned after each day's operation.

(1) Spray nozzles, orifices, cores, or whizzers shall be cleaned and sanitized immediately after being removed.

(2) High pressure lines shall be flushed with cool water, flushed with acceptable detergents, and rinsed with a sanitizing solution after each day's operation.

(3) Within 2 hours prior to resuming operations, equipment shall be reassembled and flushed with a sanitizing solution for not less than one minute.

31. Change paragraph (d) of § 55.92 to read as follows:

(d) All powder shall be sifted through a No. 16 or finer mesh screen (U. S. Bureau of Standards); and the screen shall be replaced whenever torn or worn.

32. Change paragraph (g) of § 55.92 to read as follows:

(g) Drying units used for other than drying albumen shall be cleaned and sanitized at least once each week and the primary chamber shall be cleaned whenever wet powder is encountered. Bags for bag collectors shall be dry cleaned or laundered at least once each month. Drying units used for drying albumen shall be operated in a clean and sanitary manner.

33. Change paragraph (h) of § 55.92 to read as follows:

(h) Powder conveyors, mechanical powder coolers, and blenders used in drying other than albumen shall be cleared of product daily and cleaned whenever operations have ceased for 24 hours or longer and at least once each week. Powder sifters shall be cleaned daily. Such equipment, when used in connection with albumen drying operations, shall be maintained in a sanitary condition.

34. Change paragraph (b) (5) of § 55.93 to read as follows:

(5) Dust-house, brush bag, and badly scorched powder and screenings, shall not be blended or officially identified, except that brush bag powder from albumen driers may be blended and officially identified.

35. Change paragraph (h) of § 55.96, to read as follows:

(h) Utensils used in packaging dried eggs shall be kept clean at all times and whenever contaminated shall be cleaned and sanitized. When not in use scoops, brushes, tampers, and other similar equipment shall be stored in sanitary cabinets or racks provided for this purpose.

36. Change paragraph (c) of § 55.97 *Dried egg storage*, to read as follows:

(c) Spray process dried whole eggs should be placed under refrigeration as soon as possible after packaging. Such products should be placed under refrigeration at 50° F. or below within 24 hours after manufacture.

37. Change § 55.99 to read as follows:

§ 55.99 *Cleaning and sanitizing requirements*—(a) *Cleaning.* (1) Equipment used in egg processing operations which comes in contact with liquid eggs or exposed edible products shall be cleaned to eliminate organic matter and inorganic residues. This may be accomplished by any sanitary means but it is preferable (unless in-place cleaning is employed) to flush soiled equipment with clean cool water, dismantle it when possible and then wash by brushing with warm water containing a detergent and followed by rinsing with clean cool water. It is essential to have the equipment surfaces thoroughly clean if effective sanitizing is to be attained.

(2) Equipment shall be cleaned with such frequency as is specified elsewhere under the sanitary requirements for the particular kind of operation and type of equipment involved.

(3) In-place cleaning shall be considered to be acceptable only if the methods and procedures used accomplish cleaning equivalent to that obtained by thorough manual washing and sanitizing of dismantled equipment. The National Supervisor shall determine the acceptability of in-place cleaning procedures and may require bacteriological tests and periodic dismantling of equipment as a basis for such determination.

(b) *Sanitizing.* (1) Sanitizing shall be accomplished by subjecting, for not less than one minute, the equipment surfaces to a hypochlorite or other approved sanitizing solution carrying a minimum initial strength of 200 p. p. m. of chlorine or its equivalent. The solution shall be changed whenever the strength of the solution drops to 100 p. p. m. of available chlorine or its equivalent.

(2) Shell eggs which have been sanitized and equipment which comes in contact with edible products shall be rinsed with clean water after sanitizing if other than hypochlorites are used as sanitizing agents.

38. Change the title and first sentence of § 55.101 *Pasteurization of liquid whole eggs* to read as follows:

§ 55.101 *Pasteurization of liquid eggs.* When liquid whole eggs, whites and yolks and yolks are pasteurized the provisions of this section shall apply. * * *

39. Change the first sentence of § 55.101 (b) *Pasteuirzing operations* to read as follows: "The strained or filtered liquid egg shall be flash heated to not less than 140° F. and shall be held at this temperature for not less than 3 minutes and not more than 4 minutes."

40. Change the title and provisions of § 55.122 to read as follows:

§ 55.122 *Application for grading and inspection service with respect to egg products.* Application is hereby made, in accordance with the applicable provisions of the regulations governing the grading and inspection of egg products, for grading and inspection of egg products at the following designated plant:

Name of plant _____
Street address _____
City and State _____

In making this application the applicant agrees to comply with the terms and conditions of the aforesaid regulations (including but not being limited to such instructions governing grading and inspection of products as may be issued, from time to time, by the Administrator). This application is made for grading and inspection services to be performed on a resident inspection basis pursuant to § 55.68 and such other provisions of the aforesaid regulations which are applicable.

_____
(Applicant [1])
By _____
_____
(Street)
_____
(City) (State)
_____
(Date)

Application granted:

_____
(Date)
_____
_____
(Title)

[1] No member of or Delegate to Congress, or Resident Commissioner, shall be admitted to any benefit that may arise from this service unless derived through service rendered a corporation for its general benefit.

(Sec. 205, 60 Stat. 1090, as amended; 7 U. S. C. 1624)

Issued at Washington, D. C., this 29th day of March, 1956.

[SEAL] ROY W. LENNARTSON,
Deputy Administrator,
Agricultural Marketing Service.

[F. R. Doc. 56-2462; Filed, Mar. 30, 1956; 8:54 a. m.]

Chapter IX—Agricultural Marketing Service (Marketing Agreements and Orders), Department of Agriculture

PART 912—MILK IN DUBUQUE, IOWA, MARKETING AREA

ORDER AMENDING ORDER, AS AMENDED, REGULATING HANDLING OF MILK IN DUBUQUE, IOWA, MARKETING AREA

Sec.

912.0 Findings and determinations.

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AUTHORITY: §§ 912.0 to 912.93 issued under sec. 5 49 Stat. 753, as amended; 7 U. S. C. 608c.

§ 912.0 *Findings and determinations.* The findings and determinations hereinafter set forth are supplementary and in addition to the findings and determinations previously made in connection with the issuance of the aforesaid order: and all of said previous findings and determinations are hereby ratified and affirmed, except insofar as such findings and determinations may be in conflict with the findings and determinations set forth herein.

(a) *Findings upon the basis of the hearing record.* Pursuant to the provisions of the Agricultural Marketing Agreement Act of 1937, as amended (7 U. S. C. 601 et seq.), and the applicable rules of practice and procedure, as amended, governing the formulation of marketing agreements and marketing orders (7 CFR Part 900) a public hearing was held upon certain proposed amendments to the tentative marketing agreement and to the order, as amended, regulating the handling of milk in the Dubuque, Iowa, marketing area. Upon the basis of the evidence introduced at such hearing and the record thereof, it is hereby found that:

(1) The said order, as amended, and as hereby further amended and all of the terms and provisions thereof will tend to effectuate the declared policy of the act;

(2) The parity prices of milk produced for sale in the said marketing area as determined pursuant to section 2 of the act are not reasonable in view of the price of feeds, available supplies and other economic conditions which affect market supply of and demand for such milk and the minimum prices specified in the order, as amended, and as hereby further amended, are such prices as will reflect the aforesaid factors, insure a sufficient quantity of pure and wholesome milk and be in the public interest; and

(3) The said order, as amended, and as hereby further amended regulates the handling of milk in the same manner as and is applicable only to persons in the respective classes of industrial and commercial activity specified in a marketing agreement upon which a hearing has been held.

(b) *Determinations.* It is hereby determined that handlers (excluding cooperative associations of producers who are not engaged in processing, distributing or shipping the milk covered by this order amending the order, as amended, which is marketed within the Dubuque, Iowa, marketing area) refused or failed to sign the proposed marketing agreement regulating the handling of milk in the Dubuque, Iowa, marketing area, and it is hereby further determined that:

(1) The refusal or failure of such handlers to sign said proposed marketing agreement tends to prevent the effectuation of the declared policy of the act;

(2) The issuance of this order amending the order, as amended, is the only practicable means pursuant to the declared policy of the act of advancing the interests of producers of milk which is produced for sale in the Dubuque, Iowa, marketing area; and

(3) The issuance of this order amending the order, as amended, is approved or favored by at least two-thirds of the producers who participated in a referendum thereon and who, during the determined representative period (January 1956) were engaged in the production of milk for sale in the Dubuque, Iowa, marketing area.

Order relative to handling. It is therefore ordered that on and after the effective date hereof, the handling of milk in the Dubuque, Iowa, marketing area shall be in conformity to and in compliance with the terms and conditions of the aforesaid order, as amended, and as hereby further amended, and the aforesaid order, as amended, is hereby amended to read as follows:

DEFINITIONS

§ 912.1 *Act.* "Act" means Public Act No. 10, 73d Congress, as amended and as reenacted and amended, by the Agricultural Marketing Agreement Act of 1937, as amended (7 U. S. C. 601 et seq.).

§ 912.2 *Secretary.* "Secretary" means the Secretary of Agriculture or such other officer or employee of the United States as may be authorized to exercise the powers or to perform the duties of the said Secretary of Agriculture.

§ 912.3 *Dubuque, Iowa, Marketing Area.* "Dubuque, Iowa, marketing area," hereinafter called the "marketing area," means the territory within the corporate limits of the city of Dubuque and the township of Dubuque, sections 1, 2, 3, 11 and 12, of the township of Table Mound and sections 5 and 6 of the township of Mosalem, all in Dubuque County, Iowa.

§ 912.4 *Butter price.* "Butter price" means the simple average of the wholesale selling prices per pound (using the midpoint of any price range as one price) of Grade A (92-score) bulk creamery butter at Chicago as reported by the United States Department of Agriculture during the delivery period.

§ 912.5 *Person.* "Person" means any individual, partnership, corporation, association, or any other business unit.

§ 912.6 *Delivery period.* "Delivery period" means the calendar month or the total portion thereof during which this part is in effect.

§ 912.7 *Cooperative association.* "Cooperative association" means any cooperative marketing association of producers which the Secretary determines (a) is qualified under the provisions of the act of Congress of February 11, 1922, as amended, known as the "Capper-Volstead Act;" (b) has full authority in the sale of milk of its members; and (c) is engaged in making collective sales of or marketing milk or its products for its members.

§ 912.8 *Producer.* "Producer" means any person who, in conformity with the requirements of an applicable health authority, produces milk which is permitted by the health authorities of the city of Dubuque to be disposed of for consumption as Grade A milk and which (a) is received at the plant of a handler, or (b) is caused by a handler to be diverted from the plant of the handler to the plant of a nonhandler for the account of such handler. This definition shall not include a person with respect to milk produced by him which is received by a handler who is subject to another marketing order issued pursuant to the act and who is partially exempt from the provisions of this part pursuant to § 912.56.

§ 912.9 *Handler.* "Handler" means (a) any person in his capacity as the operator of (1) a milk processing plant from which milk is disposed of on wholesale or retail routes (including plant stores) within the marketing area, or (2) a plant which is under regular inspection of the city of Dubuque and from which Class I milk is transferred to a plant described in subparagraph (1) of this section; and (b) a cooperative association with respect to the milk of member producers which it causes to be diverted to the plant of a nonhandler for the account of the association. Milk so diverted shall be deemed to have been received by the cooperative association.

§ 912.10 *Producer - handler.* "Producer-handler" means any person who is both a producer and a handler and who receives no milk directly from the farms of other producers: *Provided,* That the maintenance, care and management of the dairy animals and other resources necessary to produce the milk and the processing, packaging and distribution of the milk are the personal enterprise and the personal risk of such person.

§ 912.11 *Producer milk.* "Producer milk" means all skim milk and butterfat which is produced by a producer, other than a producer-handler, and which is received by a handler either directly from producers or from other handlers.

§ 912.12 *Other source milk.* "Other source milk" means all skim milk and butterfat received by a handler except that contained in producer milk.

MARKET ADMINISTRATOR

§ 912.20 *Designation.* The agency for the administration of this part shall be a market administrator who shall be a person selected by the Secretary. Such person shall be entitled to such compensation as may be determined by and shall be subject to removal at the discretion of the Secretary.

§ 912.21 *Powers.* The market administrator shall have the power to:

(a) Administer the terms and provisions of this part;

(b) Make rules and regulations to effectuate the terms and provisions of this part;

(c) Receive, investigate, and report to the Secretary complaints of violations of the terms and provisions of this part; and

(d) Recommend to the Secretary amendments hereto.

§ 912.22 *Duties.* The market administrator shall perform all duties necessary to administer the terms and provisions of this part including but not limited to the following:

(a) Within 30 days following the date on which he enters upon his duties, or such lesser period as may be prescribed by the Secretary, execute and deliver to the Secretary a bond, effective as of the date on which he enters upon such duties, and conditioned upon the faithful performance of such duties, in an amount and with surety thereon satisfactory to the Secretary;

(b) Employ and fix the compensation of such persons as may be necessary to enable him to administer the terms and provisions of this part;

(c) Obtain a bond in a reasonable amount and with reasonable surety thereon covering each employee who handles funds entrusted to the market administrator:

(d) Pay out of the funds provided by § 912.80, the cost of his bond and the bonds of his employees, his own compensation and all other expenses, except those incurred under § 912.81, necessarily incurred by him in the maintenance and functioning of his office and in the performance of his duties;

(e) Keep such books and records as will clearly reflect the transactions provided for in this part, and upon request by the Secretary surrender the same to such other person as the Secretary may designate;

(f) Publicly announce, unless otherwise directed by the Secretary, by posting in a conspicuous place in his office and by such other means as he deems appropriate the name of any person who, within 10 days of the date on which he is required to perform such acts, has not made reports pursuant to § 912.30, or payments pursuant to §§ 912.70, 912.73, 912.75, 912.80 and 912.81;

(g) Audit each handler's records and payments by inspection of such handler's records and the records of any other person upon whose utilization the classification of skim milk and butterfat for such handler depends;

(h) On or before the 10th day after the end of each delivery period report to each cooperative association which so requests the utilization of the milk caused to be delivered to each handler by such cooperative association. For this purpose such milk shall be prorated to each class in the same proportion that total receipts of producer milk by such handler were used in each class;

(i) Publicly announce by posting in a conspicuous place in his office and by such other means as he deems appropriate the prices determined for each delivery period as follows:

(1) On or before the 5th day of each delivery period (i) the minimum price for Class I milk computed pursuant to § 912.50 (a), and the butterfat differential computed pursuant to § 912.51 (a), both for the current delivery period, and (ii) the minimum prices for Class II milk and Class III milk computed pursuant to § 912.50 (b) and (c), and the butterfat differentials computed pursuant to § 912.51 (b) and (c) for the preceding delivery period, and

(2) On or before the 10th day after the end of the delivery period the uniform price computed pursuant to § 912.61 and the butterfat differential computed pursuant to § 912.71; and

(j) Prepare and disseminate to the public such statistics and information as he deems advisable and as do not reveal confidential information.

REPORTS, RECORDS AND FACILITIES

§ 912.30 *Delivery period reports of receipts and utilization.* On or before the 7th day after the end of each delivery period each handler, except a producer-handler, shall report to the market administrator in the detail and on forms prescribed by the market administrator:

(a) The quantities of skim milk and butterfat contained in milk received from producers;

(b) The quantities of skim milk and butterfat contained in (or used in the production of) receipts from any other handler;

(c) The quantities of skim milk and butterfat contained in receipts of other source milk (except nonfluid milk products disposed of in the form in which received without further processing by the handler);

(d) The utilization of all receipts required to be reported pursuant to this section; and

(e) Such other information with respect to such receipts and utilization as the market administrator may prescribe.

§ 912.31 *Other reports.* (a) Each producer-handler shall make reports to the market administrator at such time and in such manner as the market administrator may prescribe.

(b) On or before the 20th day of each delivery period each handler shall submit to the market administrator such handler's producer payroll for the preceding delivery period which shall show: (1) The total pounds of milk received from each producer and cooperative association and the total pounds of butterfat contained in such milk, (2) the amount of payment to each producer and cooperative association, and (3) the nature and amount of any deductions involved in such payments.

§ 912.32 *Records and facilities.* Each handler shall maintain and make available to the market administrator or to his representative during the usual hours of business such accounts and records of his operations and such facilities as are necessary for the market administrator to verify or to establish the correct data with respect to:

(a) The receipts and utilization in whatever form of all skim milk and butterfat received, including nonfluid milk products disposed of in the form in which received without further processing;

(b) The weights and tests for butterfat and other contents of all milk, skim milk, cream and milk products handled;

(c) Payments to producers and cooperative associations; and

(d) The pounds of skim milk and butterfat contained in or represented by all milk, skim milk, cream and milk products on hand at the beginning and end of each delivery period.

§ 912.33 *Retention of records.* All books and records required under this part to be made available to the market administrator shall be retained by the handler for a period of three years to begin at the end of the calendar month to which such books and records pertain: *Provided,* That if, within such three-year period the market administrator notifies the handler in writing that the retention of such books and records, or of specified books and record is necessary in connection with a proceeding under section 8c (15) (A) of the act or a court action specified in such notice, the handler shall retain such books and records as specified books and records, until further written notification from the market administrator. In either case the market administrator shall give further written notification to the handler promptly upon the termination of the litigation or when the records are no longer necessary in connection therewith.

CLASSIFICATION

§ 912.40 *Skim milk and butterfat to be classified.* All skim milk and butterfat in any form received by a handler during the delivery period and required to be reported pursuant to § 912.30 shall be classified by the market administrator pursuant to the provisions of §§ 912.41 through 912.46.

§ 912.41 *Classes of utilization.* Subject to the conditions set forth in §§ 912.43, and 912.44 the classes of utilization shall be as follows:

(a) *Class I milk.* Class I milk shall be all skim milk (including reconstituted skim milk) and butterfat disposed of in the form of milk, skim milk, buttermilk, flavored milk, flavored milk drinks, cream, or any mixture (except mixes for ice cream and frozen desserts) of cream and milk or skim milk containing more than 6 percent of butterfat and all skim milk and butterfat not specifically accounted for under paragraphs (b) and (c) of this paragraph;

(b) *Class II milk.* Class II milk shall be all skim milk and butterfat (1) used to produce evaporated milk, condensed milk, ice cream, mixes for ice cream and frozen desserts, cottage cheese, and any milk product other than those specified in paragraphs (a) and (c) of this section, or (2) disposed of to wholesale manufacturers of food products; and

(c) *Class III milk.* Class III milk shall be all skim milk and butterfat (1) used to produce butter, American type Cheddar cheese, animal feed, casein, and nonfat dry milk solids, (2) in shrinkage up to 2 percent of receipts from producers, and (3) in shrinkage of other source milk.

§ 912.42 *Shrinkage.* The market administrator shall allocate shrinkage over a handler's receipts as follows:

(a Compute the total shrinkage of skim milk and butterfat for each handler; and

(b) Prorate the resulting amounts between the receipts of skim milk and butterfat received from producers and from other sources.

§ 912.43 *Responsibility of handlers and reclassification of milk.* (a) All skim milk and butterfat shall be Class I unless the handler who first receives such skim milk or butterfat can prove to the market administrator that such skim milk or butterfat should be classified otherwise; and

(b) Any skim milk or butterfat (except that transferred to a producer-handler) shall be reclassified if verification by the market administrator discloses that the original classification was incorrect.

§ 912.44 *Transfers.* Skim milk or butterfat disposed of by a handler either by transfer or diversion shall be classified as follows:

(a) As Class I milk if transferred or diverted in the form of milk, skim milk, or cream to another handler, except a producer-handler, unless utilization in another class is mutually indicated in

writing to the market administrator by both handlers on or before the 7th day after the end of the delivery period within which such transaction occurred, but in no event shall the amount classified in any class exceed the total use in such class by the transferee handler: *Provided,* That, if either or both handlers have received other source milk, the milk so disposed of shall be classified at both plants so as to return the higher class utilization to producer milk;

(b) As Class I milk if transferred to a producer-handler in the form of milk, skim milk or cream;

(c) As Class I milk if transferred or diverted in the form of milk, skim milk or cream to a nonhandler's plant unless (1) the handler claims other classification on the basis of utilization mutually indicated in writing to the market administrator by both the handler and nonhandler on or before the 7th day after the end of the delivery period within which such transfer or diversion occurred, (2) such nonhandler maintains books and records showing the utilization of all skim milk and butterfat at his plant, which are made available if requested by the market administrator for the purpose of verification, and (3) such nonhandler's plant had actually used not less than an equivalent amount of skim milk and butterfat in the use indicated in such statement: *Provided,* That, if verification of such nonhandler's records discloses that an equivalent amount of skim milk and butterfat had not been used in such indicated utilization, the remaining pounds shall be classified in series beginning with the next higher priced classification in which such nonhandler had utilization.

§ 912.45 *Computation of skim milk and butterfat in each class.* For each delivery period, the market administrator shall correct for mathematical and other obvious errors the delivery period report submitted by each handler and shall compute the total pounds of skim milk and butterfat, respectively, in Class I milk, Class II milk, and Class III milk for such handler.

§ 912.46 *Allocation of skim milk and butterfat to be classified.* After computing the classification of all skim milk and butterfat received by a handler pursuant to § 912.45, the market administrator shall determine the classification of milk received from producers as follows:

(a) Skim milk shall be allocated in the following manner:

(1) Subtract from the total pounds of skim milk in Class III the pounds of skim milk determined pursuant to § 912.41 (c) (2),

(2) Subtract from the remaining pounds of skim milk in each class in series beginning with the lowest priced class in which the handler has use, the pounds of skim milk contained in other source milk: *Provided,* That, in the case of a handler who receives from a plant regulated under another order issued pursuant to the act, milk or milk products in packaged form which are defined as Class I milk under this order and which have been classified and priced under the other order, and who transfers Class I milk in packaged form to the same plant from which the above mentioned packaged milk is received, there shall be subtracted from the pounds of skim milk in Class I an amount equal to the pounds of skim milk contained in the packaged Class I items, either received by the handler from the plant subject to regulation under the other order, or transferred by the handler to such plant, whichever is the lesser amount;

(3) Subtract from the remaining pounds of skim milk in each class the pounds of skim milk contained in receipts from other handlers in accordance with its classification as determined pursuant to § 912.44 (a),

(4) Add to the remaining pounds of skim milk in Class III the pounds of skim milk subtracted pursuant to subparagraph (1) of this paragraph,

(5) If the remaining pounds of skim milk in all classes exceed the pounds of skim milk received from producers an amount equal to the difference shall be subtracted from the pounds of skim milk in each class in series beginning with the lowest priced class in which the handler has use. Any amount so subtracted shall be called "overrun"; and

(b) Butterfat shall be allocated in accordance with the same procedure outlined for skim milk in paragraph (a) of this section.

MINIMUM PRICES

§ 912.50 *Class prices.* Subject to the provisions of §§ 912.51 and 912.52, the minimum prices per hundredweight to be paid by each handler for milk received at his plant from producers during the delivery period shall be as follows:

(a) *Class I milk.* The price established per hundredweight of Class I milk under Order No. 44, as amended, regulating the handling of milk in the Quad Cities marketing area, minus 10 cents;

(b) *Class II milk.* The higher of the prices resulting from the computations made pursuant to subparagraphs (1) and (2) of this paragraph:

(1) The average of the basic or field prices reported to have been paid or to be paid for milk of 3.5 percent butterfat content received from farmers during the period, beginning with the 16th day of the preceding month and ending with the 15th day of the then current month at the following plants for which prices have been reported to the market administrator or to the Department of Agriculture:

Present Operator of Plant and Location

Amboy Milk Products Company, Amboy, Ill.
Borden Company, Dixon, Ill.
Borden Company, Sterling, Ill.
Carnation Company, Morrison, Ill.
Carnation Company, Oregon, Ill.
Carnation Company, Waverly, Iowa.
United Milk Products Company, Argo Fay, Ill.

(2) The price resulting from the following computations:

(i) Multiply the butter price by 6,

(ii) Add an amount equal to 2.4 times the average of the weekly prices of the cheese known as "Cheddar" or the Wisconsin Cheese Exchange at Plymouth, Wisconsin, as reported by the Department of Agriculture during the delivery period. If there are no sales on the exchange during any week, the last previously quoted price shall be used as the price for that week in making these computations,

(iii) Divide the resulting sum by 7.

(iv) Add 30 percent thereof, and

(v) Multiply the resulting sum by 3.5; and

(c) *Class III milk.* The price for Class II milk minus 10 cents.

§ 912.51 *Butterfat differentials to handlers.* If the average butterfat content of the milk of any handler allocated to any class pursuant to § 912.46 is more or less than 3.5 percent there shall be added to the respective class prices computed pursuant to § 912.50 for each one-tenth of 1 percent that the average butterfat content of such milk is above 3.5 percent or subtracted for each one-tenth of 1 percent that such average butterfat content is below 3.5 percent, an amount equal to the applicable butterfat differential computed as follows:

(a) *Class I milk.* Multiply by 1.40 the butter price for the preceding delivery period and divide the result by 10;

(b) *Class II milk.* Multiply the butter price by 1.20 and divide the result by 10; and

(c) *Class III milk.* Multiply the butter price by 1.20 and divide the result by 10.

§ 912.52 *Emergency price provisions.* Whenever the provisions of this part require the market administrator to use a specific price (or prices) for milk or any milk product for the purpose of determining class prices or for any other purpose and the price specified is not reported or published as indicated, the market administrator shall use a price determined by the Secretary to be equivalent to or comparable with the prices specified.

APPLICATION OF PROVISIONS

§ 912.55 *Application to producer-handlers.* Sections 912.40 to 912.46, 912.52, 912.60 to 912.62, 912.70 to 912.76 and 912.80 to 912.82, shall not apply to the handling of milk by a producer-handler.

§ 912.56 *Handlers subject to other Federal orders.* In the case of any handler who disposes of a greater portion of his milk as Class I milk in another marketing area regulated by another milk marketing order issued pursuant to the act, the provisions of this order shall not apply except that such handler shall, with respect to his total receipts of skim milk and butterfat, make reports to the market administrator at such time and in such manner as the market administrator may require and allow verification of such reports by the market administrator.

DETERMINATION OF UNIFORM PRICE

§ 912.60 *Computation of value of milk.* The value of the milk received during each delivery period by each handler from producers shall be a sum of money computed by the market administrator by multiplying the pounds of such milk in each class by the applicable class prices and adding together the resulting amounts: *Provided,* That, if the handler

had overrun of either skim milk or butterfat there shall be added to the above values an amount computed by multiplying the pounds of overrun by the applicable class prices.

§ 912.61 *Computation of uniform price.* For each delivery period the market administrator shall compute the uniform price per hundredweight for milk of 3.5 percent butterfat content received from producers as follows:

(a) Combine into one total the values computed pursuant to § 912.60 for all handlers who made the reports prescribed by § 912.30 and who made the payments pursuant to §§ 912.70 and 912.73 for the preceding delivery period;

(b) Add not less than one-half the cash balance on hand in the producer-settlement fund less the total amount of contingent obligations to handlers pursuant to § 912.75;

(c) Subtract, if the average butterfat content of the milk included in these computations is greater than 3.5 percent, or add, if such average butterfat content is less than 3.5 percent, an amount computed by multiplying the amount by which the average butterfat content of such milk varies from 3.5 percent by the butterfat differential computed pursuant to § 912.71, and multiplying the resulting figure by the total hundredweight of such milk;

(d) Divide the resulting sum by the total hundredweight of milk included in these computations; and

(e) Subtract not less than 4 cents nor more than 5 cents from the amount per hundredweight computed pursuant to paragraph (d) of this section. The resulting figure shall be the uniform price for milk received from producers.

§ 912.62 *Notification of handlers.* On or before the 10th day after the end of each delivery period, the market administrator shall mail to each handler at his last known address, a statement showing:

(a) The classification and value of the milk received from producers by such handler;

(b) The applicable class prices and the uniform price; and

(c) The amount due such handler or the amount to be paid by such handler, as the case may be, pursuant to §§ 912.73 and 912.74.

PAYMENTS FOR MILK

§ 912.70 *Time and method of payment.* Each handler shall make payments as follows:

(a) On or before the 15th day after the end of the delivery period during which the milk was received, to each producer for milk, except that for which payment is made to a cooperative association pursuant to paragraph (b) of this section, at not less than the uniform price computed pursuant to § 912.61, subject to the butterfat differential computed pursuant to § 912.71.

(b) On or before the 12th day after the end of the delivery period during which the milk was received, to a cooperative association for milk which it caused to be delivered to such handler from producers' farms, of an amount equal to not less than the sum of the individual payments otherwise payable to such producers.

§ 912.71 *Producer butterfat differential.* In making payments pursuant to § 912.70 there shall be added to or subtracted from the uniform price for each one-tenth of one percent that the average butterfat content of the milk received from producers is above or below 3.5 percent, an amount computed by multiplying the butter price by 1.20 and dividing the resulting sum by 10.

§ 912.72 *Producer-settlement fund.* The market administrator shall establish and maintain a separate fund known as the "producer-settlement fund" into which he shall deposit all payments made by handlers pursuant to §§ 912.73 and 912.75 and out of which he shall make all payments to handlers pursuant to §§ 912.74 and 912.75.

§ 912.73 *Payments to the producer-settlement fund.* On or before the 12th day after the end of each delivery period, each handler shall pay to the market administrator the amount by which the utilization value of the milk received by such handler from producers during such delivery period is greater than the amount required to be paid by such handle pursuant to § 912.70.

§ 912.74 *Payments out of the producer-settlement fund.* On or before the 12th day after the end of each delivery period, the market administrator shall pay to each handler the amount by which the utilization value of the milk received by such handler from producers during the delivery period is less than the amount required to be paid producers by such handler pursuant to § 912.70: *Provided*, That, if the balance in the producer-settlement fund is insufficient to make all payments pursuant to this section, the market administrator shall reduce uniformly such payments and shall complete such payments as soon as the necessary funds are available. No handler who has not received the balance of such payments from the market administrator shall be considered in violation of § 912.70 if he reduces his payments to producers by not more than the amount of the reduction in payment from the producer-settlement fund.

§ 912.75 *Adjustment of errors in payments.* Whenever audit by the market administrator of any handler's reports, books, records or accounts discloses errors resulting in moneys due (a) the market administrator from such handler, (b) such handler from the market administrator, or (c) any producer or cooperative association from such handler, the market administrator shall promptly notify such handler of any amount so due, and payment thereof shall be made on or before the next date for making payments set forth in the provision under which such error occurred.

§ 912.76 *Interest on overdue accounts.* Any unpaid obligation of a handler or of the market administrator pursuant to §§ 912.72, 912.73, 912.74, 912.75, 912.80 and 912.81 shall be increased one-half of one percent on the first day of the calendar month next following the due date of such obligation and on the first day of each calendar month thereafter until such obligation is paid.

MISCELLANEOUS PROVISIONS

§ 912.80 *Expense of administration.* As his pro rata share of the expense of administration of this part, each handler shall pay to the market administrator on or before the 12th day after the end of the delivery period, 4 cents per hundredweight, or such lesser amount as the Secretary from time to time may prescribe with respect to all milk received within the delivery period from producers (including the handler's own production) and from sources other than producers or other handlers.

§ 912.81 *Marketing services*—(a) *Deductions.* Except as set forth in paragraph (b) of this section, each handler in making payments to producers (other than himself) pursuant to § 912.70 shall deduct 5 cents per hundredweight or such lesser amount as the Secretary from time to time may prescribe, and shall pay such deductions to the market administrator on or before the 12th day after the end of such delivery period. Such moneys shall be used by the market administrator to check weights, samples and tests of milk received from producers and to provide producers with market information; and

(b) In the case of producers for whom a cooperative association is actually performing the services set forth in paragraph (a) of this section, each handler shall make, in lieu of the deduction specified in paragraph (a) of this section, such deductions from the payments to be made to such producers as may be authorized by the membership agreement or marketing contract between such cooperative association and such producers and on or before the 12th day after the end of such delivery period pay such deduction to the cooperative association rendering such services.

§ 912.82 *Termination of obligations.* The provisions of this section shall apply to any obligation under this part for the payment of money.

(a) The obligation of any handler to pay money required to be paid under the terms of this part shall, except as provided in paragraphs (b) and (c) of this section, terminate two years after the last day of the calendar month during which the market administrator receives the handler's utilization report on the milk involved in such obligation, unless within such 2-year period, the market administrator notifies the handler in writing that such money is due and payable. Service of such notice shall be complete upon mailing to the handler's last known address, and it shall contain but need not be limited to the following information:

(1) The amount of the obligation,

(2) The month(s) during which the milk with respect to which the obligation exists, was received or handled, and

(3) If the obligation is payable to one or more producers or to an association of producers, the name of such producer(s) or association of producers, or if the obligation is payable to the market admin-

istrator, the account for which it is to be paid;

(b) If a handler fails or refuses, with respect to any obligation under this part, to make available to the market administrator or his representative all books and records required by this order to be made available, the market administrator may, within the 2-year period provided for in paragraph (a) of this section, notify the handler in writing of such failure or refusal. If the market administrator so notifies a handler, the said 2-year period with respect to such obligation shall not begin to run until the first day of the calendar month following the month during which all such books and records pertaining to such obligation are made available to the market administrator or his representatives;

(c) Notwithstanding the provisions of paragraphs (a) and (b) of this section a handler's obligation under this part to pay money shall not be terminated with respect to any transaction involving fraud or willful concealment of a fact, material to the obligation on the part of the handler against whom the obligation is sought to be imposed; and

(d) Any obligation on the part of the market administrator to pay a handler any money which such handler claims to be due him under the terms of this part shall terminate two years after the end of the calendar month during which the milk involved in the claim was received if an underpayment is claimed, or two years after the end of the month during which the payment (including deduction or set-off by the market administrator) was made by the handler if a refund is claimed, unless such handler, within the applicable period of time, files pursuant to section 8c (15) (A) of the act, a petition claiming such money.

§ 912.83 *Agents.* The Secretary may by designation in writing name any officer or employee of the United States to act as his agent or representative in connection with any of the provisions of this part.

EFFECTIVE TIME, SUSPENSION AND TERMINATION

§ 912.90 *Effective time.* The provisions of this part or any amendment to this part, shall become effective at such time as the Secretary may declare and shall continue in force until suspended or terminated.

§ 912.91 *Suspension or termination.* The Secretary shall, whenever he finds this part or any provision of this part obstructs or does not tend to effectuate the declared policy of the act, terminate or suspend the operation of this part or such provision.

§ 912.92 *Continuing obligations.* If upon the suspension or termination of any or all of the provisions of this part, there are any obligations hereunder the final accrual or ascertainment of which requires further acts by any person (including the market administrator), such further acts shall be performed notwithstanding such suspension or termination.

§ 912.93 *Liquidation.* Upon the suspension or termination of the provisions of this part, except this section, the market administrator or such other liquidating agent as the Secretary may designate, shall, if so directed by the Secretary liquidate the business of the market administrator's office, dispose of all property in his possession or control, including accounts receivable, and execute and deliver all assignments or other instruments necessary or appropriate to effectuate any such disposition. If a liquidating agent is so designated, all accounts, books, and records of the market administrator shall be transferred promptly to such liquidating agent. If upon liquidation, the funds on hand exceed the amounts required to pay outstanding obligations of the office of the market administrator and to pay the necessary expenses of liquidation and distribution, such excess shall be distributed to contributing handlers and producers in an equitable manner.

Issued at Washington, D. C. this 28th day of March 1956, to be effective on and after the first day of May, 1956.

[SEAL] EARL L. BUTZ,
Assistant Secretary.

[F. R. Doc. 56-2437; Filed, Mar. 30, 1956; 8:53 a. m.]

[Navel Orange Reg. 81]

PART 914—NAVEL ORANGES GROWN IN ARIZONA AND DESIGNATED PART OF CALIFORNIA

LIMITATION OF HANDLING

§ 914.381 *Navel Orange Regulation 81*—(a) *Findings.* (1) Pursuant to the marketing agreement, as amended, and Order No. 14, as amended (7 CFR Part 914), regulating the handling of navel oranges grown in Arizona and designated part of California, effective September 22, 1953, under the applicable provisions of the Agricultural Marketing Agreement Act of 1937, as amended (7 U. S. C. 601 et seq.), and upon the basis of the recommendation and information submitted by the Navel Orange Administrative Committee, established under the said amended marketing agreement and order, and upon other available information, it is hereby found that the limitation of handling of such navel oranges, as hereinafter provided, will tend to effectuate the declared policy of the act.

(2) It is hereby further found that it is impracticable and contrary to the public interest to give preliminary notice, engage in public rule-making procedure, and postpone the effective date of this section until 30 days after publication thereof in the FEDERAL REGISTER (60 Stat. 237; 5 U. S. C. 1001 et seq.) because the time intervening between the date when information upon which this section is based became available and the time when this section must become effective in order to effectuate the declared policy of the act is insufficient, and a reasonable time is permitted, under the circumstances, for preparation for such effective time; and good cause exists for making the provisions hereof effective as hereinafter set forth. The Navel Orange Administrative Committee held an open meeting on March 29, 1956, after giving due notice thereof, to consider supply and market conditions for navel oranges and the need for regulation; interested persons were afforded an opportunity to submit information and views at this meeting; the recommendation and supporting information for regulation during the period specified herein was promptly submitted to the Department after such meeting was held; the provisions of this section, including its effective time, are identical with the aforesaid recommendation of the committee, and information concerning such provisions and effective time has been disseminated among handlers of such navel oranges; it is necessary, in order to effectuate the declared policy of the act, to make this section effective during the period herein specified; and compliance with this section will not require any special preparation on the part of persons subject thereto which cannot be completed on or before the effective date hereof.

(b) *Order.* (1) The quantity of navel oranges grown in Arizona and designated part of California which may be handled during the period beginning at 12:01 a. m., P. s. t., April 1, 1956, and ending at 12:01 a. m., P. s. t., April 8, 1956, is hereby fixed as follows:

(i) District 1: 277,200 cartons;
(ii) District 2: 970,200 cartons;
(iii) District 3: Unlimited movement;
(iv) District 4: Unlimited movement.

(2) Navel oranges handled pursuant to the provisions of this section shall be subject to any size restrictions applicable thereto which have heretofore been issued on the handling of such oranges and which are effective during the period specified herein.

(3) As used in this section, "handled," "District 1," "District 2," "District 3," and "District 4," have the same meaning as when used in said amended marketing agreement and order; and "carton" means the standard one-half orange, grapefruit, or lemon box set forth as standard container number 58 in section 828.83, as amended, of the Agricultural Code of California.

(Sec. 5, 49 Stat. 753, as amended; 7 U. S. C. 608c)

Dated: March 30, 1956.

[SEAL] S. R. SMITH,
Director, Fruit and Vegetable Division, Agricultural Marketing Service.

[F. R. Doc. 56-2488; Filed, Mar. 30, 1956; 11:25 a. m.]

PART 921—MILK IN OZARKS MARKETING AREA

ORDER AMENDING ORDER, AS AMENDED, REGULATING HANDLING OF MILK IN OZARKS MARKETING AREA

§ 921.0 *Findings and determinations.* The findings and determinations hereinafter set forth are supplementary and in addition to the findings and determinations previously made in connection with the issuance of the aforesaid order; and all of said previous findings and determinations are hereby ratified and af-

firmed, except insofar as such findings and determinations may be in conflict with the findings and determinations set forth herein.

(a) *Findings upon the basis of the hearing record.* Pursuant to the provisions of the Agricultural Marketing Agreement Act of 1937, as amended (7 U. S. C. 601 et seq.), and the applicable rules of practice and procedure, as amended, governing the formulation of marketing agreements and marketing orders (7 CFR Part 900) a public hearing was held upon certain proposed amendments to the tentative marketing agreement and to the order, as amended, regulating the handling of milk in the Ozarks marketing area. Upon the basis of the evidence introduced at such hearing and the record thereof, it is hereby found that:

(1) The said order, as amended, and as hereby further amended and all of the terms and provisions thereof will tend to effectuate the declared policy of the act;

(2) The parity prices of milk produced for sale in the said marketing area as determined pursuant to section 2 of the act are not reasonable in view of the price of feeds, available supplies of feeds and other economic conditions which affect market supply of and demand for such milk and the minimum prices specified in the order, as amended, and as hereby further amended, are such prices as will reflect the aforesaid factors, insure a sufficient quantity of pure and wholesome milk and be in the public interest; and

(3) The said order, as amended, and as hereby further amended regulates the handling of milk in the same manner as and is applicable only to persons in the respective classes of industrial and commercial activity specified in a marketing agreement upon which a hearing has been held.

(b) *Additional findings.* It is necessary, in the public interest, to make this order amending the order, as amended, effective no later than April 1, 1956. Any delay beyond April 1, 1956, in the effective date of this order amending the order, as amended will seriously disrupt the orderly marketing of milk in the Ozarks marketing area. The changes effected by this order amending the order, as amended do not require of persons affected substantial or extensive preparation prior to the effective date. In view of the foregoing, it is hereby found that good cause exists for making this order effective April 1, 1956. (See sec. 4c, Administrative Procedure Act, 5 U. S. C. 1003 (c)).

(c) *Determinations.* It is hereby determined that handlers (excluding cooperative associations of producers who are not engaged in processing, distributing or shipping milk covered by this order amending the order, as amended, which is marketed within the Ozarks marketing area) refused or failed to sign the proposed marketing agreement regulating the handling of milk in the Ozarks marketing area, and it is hereby further determined that:

(1) The refusal or failure of such handlers to sign said proposed marketing agreement tends to prevent the effectuation of the declared policy of the act;

(2) The issuance of this order amending the order, as amended, is the only practicable means, pursuant to the declared policy of the act, of advancing the interests of producers of milk which is produced for sale in the Ozarks marketing area; and

(3) The issuance of this order amending the order, as amended, is approved or favored by at least two-thirds of the producers who, during a determined representative period (January 1956), were engaged in the production of milk for sale in the Ozarks marketing area.

Order relative to handling. It is therefore ordered, that on and after the effective date hereof, the handling of milk in the Ozarks marketing area shall be in conformity to and in compliance with the terms and conditions of the aforesaid order, as amended, and as hereby further amended; and the aforesaid order, as amended, is hereby further amended as follows:

Amend § 921.51 (a) by deleting that portion which reads: "and for the months of April, May and June the price for Class I milk shall be the basic formula price for the preceding month plus 63 cents", and substituting therefor "and for the months of April, May and June, 1956, the price for Class I milk shall be the price for Class I milk computed pursuant to § 903.51 (a) of this chapter, regulating the handling of milk in the St. Louis, Missouri, marketing area for such month minus 10 cents".

(Sec. 5, 49 Stat. 753, as amended; 7 U. S. C. 608c)

Issued at Washington, D. C., this 28th day of March 1956, to be effective on and after the first day of April 1956.

[SEAL] EARL L. BUTZ,
Assistant Secretary.

[F. R. Doc. 56-2435; Filed, Mar. 30, 1956; 8:52 a. m.]

[Valencia Orange Reg. 61]

PART 922—VALENCIA ORANGES GROWN IN ARIZONA AND DESIGNATED PART OF CALIFORNIA

LIMITATION OF HANDLING

§ 922.361 *Valencia Orange Regulation 61*—(a) *Findings.* (1) Pursuant to Order No. 22 (7 CFR Part 922), regulating the handling of Valencia oranges grown in Arizona and designated part of California, effective March 31, 1954, under the applicable provisions of the Agricultural Marketing Agreement Act of 1937, as amended (7 U. S. C. 601 et seq.), and upon the basis of the recommendations and information submitted by the Valencia Orange Administrative Committee, established under the said order, and upon other available information, it is hereby found that the limitation of handling of such Valencia oranges, as hereinafter provided, will tend to effectuate the declared policy of the act.

(2) It is hereby further found that it is impracticable and contrary to the public interest to give preliminary notice, engage in public rule-making procedure, and postpone the effective date of this section until 30 days after publication thereof in the FEDERAL REGISTER (60 Stat. 237; 5 U. S. C. 1001 et seq.) because the time intervening between the date when information upon which this section is based became available and the time when this section must become effective in order to effectuate the declared policy of the act is insufficient, and a reasonable time is permitted, under the circumstances, for preparation for such effective time; and good cause exists for making the provisions hereof effective as hereinafter set forth. The Valencia Orange Administrative Committee held an open meeting on March 22, 1956, after giving due notice thereof, to consider supply and market conditions for Valencia oranges and the need for regulation; interested persons were afforded an opportunity to submit information and views at this meeting; the recommendation and supporting information for regulation during the period specified herein was promptly submitted to the Department after such meeting was held; the provisions of this section, including its effective time, are identical with the aforesaid recommendation of the committee, and information concerning such provisions and effective time has been disseminated among handlers of such Valencia oranges; it is necessary, in order to effectuate the declared policy of the act, to make this section effective during the period herein specified; and compliance with this section will not require any special preparation on the part of persons subject thereto which cannot be completed on or before the effective date hereof.

(b) *Order.* (1) During the period beginning at 12:01 a. m., P. s. t., April 1, 1956, and ending at 12:01 a. m., P. s. t., February 3, 1957, no handler shall handle any Valencia oranges, grown in District 1 or in District 3, which are of a size smaller than 2.31 inches in diameter, which shall be the largest measurement at a right angle to a straight line running from the stem to the blossom end of the fruit: *Provided,* That not to exceed 5 percent, by count, of the oranges contained in any type of container may measure smaller than 2.31 inches in diameter.

(2) As used in this section, "handle," "handler," "District 1," and "District 3" shall have the same meaning as when used in said order.

(Sec. 5, 49 Stat. 753, as amended; 7 U. S. C. 608c)

Dated: March 29, 1956.

[SEAL] S. R. SMITH,
Director, Fruit and Vegetable Division, Agricultural Marketing Service.

[F. R. Doc. 56-2457; Filed, Mar. 30, 1956; 8:54 a. m.]

[Grapefruit Reg. 240]

PART 933—ORANGES, GRAPEFRUIT, AND TANGERINES GROWN IN FLORIDA

LIMITATION OF SHIPMENTS

§ 933.781 *Grapefruit Regulation 240*—(a) *Findings.* (1) Pursuant to the mar-

keting agreement, as amended, and Order No. 33, as amended (7 CFR Part 933), regulating the handling of oranges, grapefruit, and tangerines grown in the State of Florida, effective under the applicable provisions of the Agricultural Marketing Agreement Act of 1937, as amended (7 U. S. C. 601 et seq.), and upon the basis of the recommendations of the committees established under the aforesaid amended marketing agreement and order, and upon other available information, it is hereby found that the limitation of shipments of grapefruit, as hereinafter provided, will tend to effectuate the declared policy of the act.

(2) It is hereby further found that it is impracticable and contrary to the public interest to give preliminary notice, engage in public rule-making procedure, and postpone the effective date of this section until 30 days after publication thereof in the FEDERAL REGISTER (60 Stat. 237; 5 U. S. C. 1001 et seq.) because the time intervening between the date when information upon which this section is based became available and the time when this section must become effective in order to effectuate the declared policy of the act is insufficient; a reasonable time is permitted, under the circumstances, for preparation for such effective time; and good cause exists for making the provisions hereof effective not later than April 2, 1956. Shipments of grapefruit, grown in the State of Florida, are presently subject to regulation by grades and sizes, pursuant to the amended marketing agreement and order, and will so continue until April 2, 1956; the recommendation and supporting information for continued regulation subsequent to April 1, 1956, were promptly submitted to the Department after an open meeting of the Growers Administrative Committee on March 27, 1956; such meeting was held to consider recommendations for regulation, after giving due notice of such meeting, and interested persons were afforded an opportunity to submit their views at this meeting; the provisions of this section, including the effective time hereof, are identical with the aforesaid recommendation of the committee, and information concerning such provisions and effective time has been disseminated among handlers of such grapefruit; it is necessary, in order to effectuate the declared policy of the act, to make this section effective during the period hereinafter set forth so as to provide for the continued regulation of the handling of grapefruit, and compliance with this section will not require any special preparation on the part of persons subject thereto which cannot be completed by the effective time hereof.

(b) *Order.* (1) During the period beginning at 12:01 a. m., e. s. t., April 2, 1956, and ending at 12:01 a. m., e. s. t., April 16, 1956, no handler shall ship:

(i) Any white seeded grapefruit, grown in the State of Florida, which are not mature and do not grade at least U. S. No. 1 Bronze;

(ii) Any white seedless grapefruit, grown in Regulation Area I, which are not mature and do not grade at least U. S. No. 1 Bronze;

(iii) Any white seedless grapefruit, grown in Regulation Area II, which are not mature and do not grade at least U. S. No. 2;

(iv) Any white seedless grapefruit, grown in Regulation Area II, which are mature and which grade U. S. No. 2 or U. S. No. 2 Bright unless such seedless grapefruit (*a*) are in the same container with seedless grapefruit which grade at least U. S. No. 1 Russet and (*b*) are not in excess of 40 percent, by count, of the number of all seedless grapefruit in such container;

(v) Any pink grapefruit, grown in the State of Florida, which are not mature and do not grade at least U. S. No. 2;

(vi) Any white seeded grapefruit, grown in the State of Florida, which are of a size smaller than a size that will pack 70 grapefruit, packed in accordance with the requirements of a standard pack, in a standard nailed box;

(vii) Any pink seeded grapefruit, grown in the State of Florida, which are of a size smaller than a size that will pack 80 grapefruit, packed in accordance with the requirements of a standard pack, in a standard nailed box; or

(viii) Any seedless grapefruit, grown in the State of Florida, which are of a size smaller than a size that will pack 96 grapefruit, packed in accordance with the requirements of a standard pack, in a standard nailed box.

(2) As used in this section, "handler," "ship," "Growers Administrative Committee," "Regulation Area I," and "Regulation Area II" shall have the same meaning as when used in said amended marketing agreement and order; the terms "U. S. No. 1 Russet," U. S. No. 1 Bronze," "U. S. No. 2," U. S. No. 2 Bright," "standard pack," and "standard nailed box" shall have the same meaning as when used in the revised United States Standards for Florida Grapefruit (§§ 51.750–51.790 of this title); and the term "mature" shall have the same meaning as set forth in section 601.16 Florida Statutes, Chapters 26492 and 28090, known as the Florida Citrus Code of 1949, as supplemented by section 601.17 (Chapters 25149 and 28090) and also by section 601.18, as amended on June 2, 1955 (Chapter 29760).

(Sec. 5, 49 Stat. 753, as amended; 7 U. S. C. 608c)

Dated: March 28, 1956.

[SEAL] S. R. SMITH,
Director, Fruit and Vegetable Division, Agricultural Marketing Service.

[F. R. Doc. 56–2431; Filed, Mar. 30, 1956; 8:51 a. m.]

[Orange Reg. 294]

PART 933—ORANGES, GRAPEFRUIT, AND TANGERINES GROWN IN FLORIDA

LIMITATION OF SHIPMENTS

§ 933.782 *Orange Regulations 294*—(a) *Findings.* (1) Pursuant to the marketing agreement, as amended, and Order No. 33, as amended (7 CFR Part 933), regulating the handling of oranges, grapefruit, and tangerines grown in the State of Florida, effective under the applicable provisions of the Agricultural Marketing Agreement Act of 1937, as amended (7 U. S. C. 601 et seq.), and upon the basis of the recommendations of the committees established under the aforesaid amended marketing agreement and order, and upon other available information, it is hereby found that the limitation of shipments of all Florida oranges, as hereinafter provided, will tend to effectuate the declared policy of the act.

(2) It is hereby further found that it is impracticable and contrary to the public interest to give preliminary notice, engage in public rule-making procedure, and postpone the effective date of this section until 30 days after publication thereof in the FEDERAL REGISTER (60 Stat. 237; 5 U. S. C. 1001 et seq.) because the time intervening between the date when information upon which this section is based became available and the time when this section must become effective in order to effectuate the declared policy of the act is insufficient; a reasonable time is permitted, under the circumstances, for preparation for such effective time; and good cause exists for making the provisions hereof effective not later than April 2, 1956. Shipments of all oranges, grown in the State of Florida, are presently subject to regulation by grades and sizes, pursuant to the amended marketing agreement and order, and will so continue until April 2, 1956; the recommendation and supporting information for continued regulation subsequent to April 1, 1956, were promptly submitted to the Department after an open meeting of the Growers Administrative Committee on March 27, 1956, such meeting was held to consider recommendations for regulation, after giving due notice of such meeting, and interested persons were afforded an opportunity to submit their views at this meeting; the provisions of this section, including the effective time hereof, are identical with the aforesaid recommendation of the committee, and information concerning such provisions and effective time has been disseminated among handlers of such oranges; it is necessary, in order to effectuate the declared policy of the act, to make this section effective during the period hereinafter set forth so as to provide for the continued regulation of the handling of all oranges, and compliance with this section will not require any special preparation on the part of the persons subject thereto which cannot be completed by the effective time hereof.

(b) *Order.* (1) During the period beginning at 12:01 a. m., e. s. t., April 2, 1956, and ending at 12:01 a. m., e. s. t, April 16, 1956, no handler shall ship:

(i) Any oranges, except Temple oranges, grown in the State of Florida, which do not grade at least U. S. No. 1 Russet;

(ii) Any oranges, except Temple oranges and Valencia, Lue Gim Gong, or similar late-maturing oranges of the Valencia type, grown in the State of Florida, which are of a size smaller than a size that will pack 288 oranges, packed in accordance with the requirements of

a standard pack, in a standard 1⅗ bushel nailed box; or

(iii) Any Valencia, Lue Gim Gong, or similar late-maturing oranges of the Valencia type, grown in the State of Florida, which are (*a*) of a size larger than the size that will pack 150 oranges, or (*b*) of a size smaller than the size that will pack 288 oranges, packed in accordance with the requirements of a standard pack, in a standard 1⅗ bushel nailed box.

(2) During the period beginning at 12:01 a. m., e. s. t., April 2, 1956, and ending at 12:01 a. m., e. s. t., July 31, 1956, no handler shall ship:

(i) Any Temple oranges, grown in the State of Florida, which do not grade at least U. S. No. 2.

(3) As used in this section, the terms "handler," "ship," and "Growers Administrative Committee" shall each have the same meaning as when used in said amended marketing agreement and order; and the terms "U. S. No. 1 Russet," "U. S. No. 2," "standard pack," and "standard 1⅗ bushel nailed box" shall have the same meaning as when used in the United States Standards for Florida Oranges and Tangelos (§§ 51.1140–51.1186 of this title; 20 F. R. 7205).

(Sec. 5, 49 Stat. 753, as amended; 7 U. S. C. 608c)

Dated: March 28, 1956.

[SEAL] S. R. SMITH,
Director, Fruit and Vegetable Division, Agricultural Marketing Service.

[F. R. Doc. 56-2433; Filed, Mar. 30, 1956; 8:52 a. m.]

[Tangerine Reg. 172]

PART 933—ORANGES, GRAPEFRUIT, AND TANGERINES GROWN IN FLORIDA

LIMITATION OF SHIPMENTS

§ 933.783. *Tangerine Regulation 172*—(a) *Findings.* (1) Pursuant to the marketing agreement, as amended, and Order No. 33, as amended (7 CFR Part 933), regulating the handling of oranges, grapefruit, and tangerines grown in the State of Florida, effective under the applicable provisions of the Agricultural Marketing Agreement Act of 1937, as amended (7 U. S. C. 601 et seq.), and upon the basis of the recommendations of the committees established under the aforesaid amended marketing agreement and order, and upon other available information, it is hereby found that the limitation of shipments of tangerines, as hereinafter provided, will tend to effectuate the declared policy of the act.

(2) It is hereby further found that it is impracticable and contrary to the public interest to give preliminary notice, engage in public rule-making procedure, and postpone the effective date of this section until 30 days after publication thereof in the FEDERAL REGISTER (60 Stat. 237; 5 U. S. C. 1001 et seq.) because the time intervening between the date when information upon which this section is based became available and the time when this section must become effective in order to effectuate the declared policy of the act is insufficient; a reasonable time is permitted, under the circumstances, for preparation for such effective time; and good cause exists for making the provisions effective not later than April 2, 1956. Shipments of tangerines, grown in the State of Florida, are presently subject to regulation by grades and sizes, pursuant to the amended marketing agreement and order and will so continue until April 2, 1956; the recommendation and supporting information for continued regulation subsequent to April 1, 1956, was promptly submitted to the Department after an open meeting of the Growers Administrative Committee on March 27, 1956; such meeting was held to consider recommendations for regulation, after giving due notice of such meeting, and interested persons were afforded an opportunity to submit their views at this meeting; the provisions of this section, including the effective time hereof, are identical with the aforesaid recommendation of the committee, and information concerning such provisions and effective time has been disseminated among handlers of such tangerines; it is necessary, in order to effectuate the declared policy of the act, to make this section effective during the period hereinafter set forth so as to provide for the continued regulation of the handling of tangerines, and compliance with this section will not require any special preparation on the part of persons subject thereto which cannot be completed on or before the effective time hereof.

(b) *Order.* (1) During the period beginning at 12:01 a. m., e. s. t., April 2, 1956, and ending at 12:01 a. m., e. s. t., April 16, 1956, no handler shall ship:

(i) Any tangerines, grown in the State of Florida, that do not grade at least U. S. No. 2;

(ii) Any tangerines, grown in the State of Florida, which grade U. S. Fancy, U. S. No. 1, U. S. No. 1 Bronze or U. S. No. 1 Russet, that are of a size smaller than the size that will pack 246 tangerines, packed in accordance with the requirements of a standard pack, in a half-standard box (inside dimensions 9½ x 9½ x 19⅛ inches; capacity 1,726 cubic inches); or

(iii) Any tangerines grown in the State of Florida, which grade U. S. No. 2, that are of a size smaller than the size that will pack 210 tangerines, packed in accordance with the requirements of a standard pack, in a half-standard box (inside dimensions 9½ x 9½ x 19⅛ inches; capacity 1,726 cubic inches).

(2) As used in this section, "handler," "ship," and "Growers Administrative Committee" shall have the same meaning as when used in said amended marketing agreement and order; and the terms "U. S. Fancy," "U. S. No. 1," "U. S. No. 1 Bronze," "U. S. No. 1 Russet," "U. S. No. 2," and "standard pack" shall have the same meaning as when used in the revised United States Standards for Florida Tangerines (§§ 51.1810 to 51.1836 of this title).

(Sec. 5, 49 Stat. 753, as amended; 7 U. S. C. 608c)

Dated: March 28, 1956.

[SEAL] S. R. SMITH,
Director, Fruit and Vegetable Division, Agricultural Marketing Service.

[F. R. Doc. 56-2432; Filed, Mar. 30, 1956; 8:51 a. m.]

[Lemon Reg. 635]

PART 953—LEMONS GROWN IN CALIFORNIA AND ARIZONA

LIMITATION OF SHIPMENTS

§ 953.742 *Lemon Regulation 635*—(a) *Findings.* (1) Pursuant to the marketing agreement, as amended, and Order No. 53, as amended (7 CFR Part 953; 20 F. R. 8451), regulating the handling of lemons grown in the State of California or in the State of Arizona, effective under the applicable provisions of the Agricultural Marketing Agreement Act of 1937, as amended (7 U. S. C. 601 et seq.), and upon the basis of the recommendation and information submitted by the Lemon Administrative Committee, established under the said amended marketing agreement and order, and upon other available information, it is hereby found that the limitation of the quantity of such lemons which may be handled, as hereinafter provided, will tend to effectuate the declared policy of the act.

(2) It is hereby further found that it is impracticable and contrary to the public interest to give preliminary notice, engage in public rule-making procedure, and postpone the effective date of this section until 30 days after publication thereof in the FEDERAL REGISTER (60 Stat. 237; 5 U. S. C. 1001 et seq.) because the time intervening between the date when information upon which this section is based became available and the time when this section must become effective in order to effectuate the declared policy of the act is insufficient, and a reasonable time is permitted, under the circumstances, for preparation for such effective time; and good cause exists for making the provisions hereof effective as hereinafter set forth. Shipments of lemons, grown in the State of California or in the State of Arizona, are currently subject to regulation pursuant to said amended marketing agreement and order; the recommendation and supporting information for regulation during the period specified herein was promptly submitted to the Department after an open meeting of the Lemon Administrative Committee on March 28, 1956, such meeting was held, after giving due notice thereof to consider recommendations for regulation, and interested persons were afforded an opportunity to submit their views at this meeting; the provisions of this section, including its effective time, are identical with the aforesaid recommendation of the committee, and information concerning such provisions and effective time has been disseminated among handlers of such

lemons; it is necessary, in order to effectuate the declared policy of the act, to make this section effective during the period hereinafter specified; and compliance with this section will not require any special preparation on the part of persons subject thereto which cannot be completed by the effective time thereof.

(b) *Order.* (1) The quantity of lemons grown in the State of California or in the State of Arizona which may be handled during the period beginning at 12:01 a. m., P. s. t., April 1, 1956, and ending at 12:01 a. m., P. s. t., April 8, 1956, is hereby fixed as follows:

(i) District 1: 4,650 cartons;

(ii) District 2: 274,350 cartons;

(iii) District 3: Unlimited movement.

(2) As used in this section, "handled," "District 1," "District 2," and "District 3" have the same meaning as when used in the said amended marketing agreement and order; and "carton" means the standard one-half orange, grapefruit or lemon box set forth as standard container number 58 in section 828.83, as amended, of the Agricultural Code of California.

(Sec. 5, 49 Stat. 753, as amended; 7 U. S. C. 608c)

Dated: March 29, 1956.

[SEAL] S. R. SMITH,
Director, Fruit and Vegetable Division, Agricultural Marketing Service.

[F. R. Doc. 56-2475; Filed, Mar. 30, 1956; 8:55 a. m.]

PART 965—MILK IN CINCINNATI, OHIO, MARKETING AREA

ORDER AMENDING ORDER, AS AMENDED, REGULATING HANDLING OF MILK IN CINCINNATI, OHIO, MARKETING AREA

§ 965.0 *Findings and determinations.* The findings and determinations hereinafter set forth are supplementary and in addition to the findings and determinations previously made in connection with the issuance of the aforesaid order and of the previously issued amendments thereto, and all said previous findings and determinations are hereby ratified and affirmed, except insofar as such findings and determinations may be in conflict with the findings and determinations set forth herein.

(a) *Findings upon the basis of the hearing record.* Pursuant to the provisions of the Agricultural Marketing Agreement Act of 1937, as amended (7 U. S. C. 601 et seq.) and the applicable rules of practice and procedure, as amended, governing the formulation of marketing agreements and marketing orders (7 CFR Part 900), a public hearing was held upon certain proposed amendments to the tentative marketing agreement and to the order, as amended, regulating the handling of milk in the Cincinnati, Ohio, marketing area. Upon the basis of the evidence introduced at such hearing and the record thereof, it is found that:

(1) The said order, as amended, and as hereby further amended, and all of the terms and conditions thereof, will tend to effectuate the declared policy of the act;

(2) The parity prices of milk as determined pursuant to section 2 of the act are not reasonable in view of the price of feeds, available supplies of feeds, and other economic conditions which affect market supply and demand for milk in the said marketing area, and the minimum prices specified in the order, as amended, and as hereby further amended, are such prices as will reflect the aforesaid factors, insure a sufficient quantity of pure and wholesome milk and be in the public interest; and

(3) The said order, as amended, and as hereby further amended, regulates the handling of milk in the same manner as, and is applicable only to persons in the respective classes of industrial and commercial activity specified in, a marketing agreement upon which a hearing has been held.

(b) *Additional findings.* It is hereby found and determined that good cause exists for making this order amending the order, as amended, effective not later than April 1, 1956. Such action is necessary in the public interest in order to reflect current marketing conditions and to insure the orderly marketing of available milk supplies. Accordingly, any further delay in the effective date of this order amending the order, as amended, will seriously impair the orderly marketing of milk produced for the Cincinnati, Ohio, marketing area. The regulatory provisions of this order amending the order, as amended, are such that little or no preparation prior to its effective date will be required of handlers regulated thereunder. Under these circumstances the handlers will be afforded reasonable time for any such preparations as may be necessary. Therefore, it is impracticable, unnecessary, and contrary to the public interest to delay the effective date of this order as amended, until at least 30 days after its publication in the FEDERAL REGISTER, and good cause exists, pursuant to section 4 (c) of the Administrative Procedure Act (5 U. S. C. 1000) for making this order amending the order, as amended, effective April 1, 1956.

(c) *Determinations.* It is hereby determined that handlers (excluding cooperative associations of producers who are not engaged in processing, distributing, or shipping milk covered by this order, as amended, and as hereby further amended, which is marketed within the Cincinnati, Ohio, marketing area) of more than 50 percent of the milk which is marketed within the said marketing area, refused or failed to sign the proposed marketing agreement regulating the handling of milk in the said marketing area, and it is hereby further determined that:

(1) The refusal or failure of such handlers to sign said proposed marketing agreement tends to prevent the effectuation of the declared policy of the act;

(2) The issuance of this order amending the order, as amended, is the only practical means, pursuant to the declared policy of the act, of advancing the interests of producers of milk which is produced for sale in the said marketing area; and

(3) The issuance of this order amending the order, as amended, is approved or favored by at least two-thirds of the producers who, during the determined representative period (January 1956), were engaged in the production of milk for sale in the said marketing area.

Order relative to handling. It is therefore ordered, that on and after the effective date hereof, the handling of milk in the Cincinnati, Ohio, marketing area shall be in conformity to and in compliance with the terms and conditions of the aforesaid order, as amended, and as hereby further amended as follows:

1. Delete that portion of § 965.8 prior to paragraph (a) therein and substitute therefor the following:

§ 965.8 *Producer.* "Producer" means any person operating a dairy farm who produces milk under a dairy farm permit issued by an appropriate health authority which is received at a "pool plant" described in § 965.7, diverted from a pool plant to a nonpool plant during any of the months of March through August, inclusive, for the account of a handler as defined in § 965.9 (a), or so diverted during any month of the year for the account of a handler as defined in § 965.9 (b); and milk so diverted shall be deemed to have been received by the transferor-handler at the pool plant from which it was diverted: *Provided,* That the application of §§ 965.53 and 965.73 (c) to any such diverted milk shall be made on the basis of the location (whether more or less than 45 miles from the City Hall in Cincinnati) of the nonpool plant where received, subject to the following conditions:

2. Delete from § 965.9 (b) the phrase which reads as follows: ", if payment therefor has been collected by such association * * *".

3. Delete § 965.64 (a) (4) and substitute therefor the following:

(4) Add for each of the months of September, October, November, and December an amount computed by dividing the total amount of the obligated balance in the producer-settlement fund pursuant to § 965.71 (b) on September 30 immediately preceding by 4;

(Sec. 5, 49 Stat. 753, as amended; 7 U. S. C. 608c)

Issued at Washington, D. C., this 28th day of March 1956 to be effective on and after April 1, 1956.

[SEAL] EARL L. BUTZ,
Assistant Secretary.

[F. R. Doc. 56-2436; Filed, Mar. 30, 1956; 8:53 a. m.]

TITLE 14—CIVIL AVIATION

Chapter I—Civil Aeronautics Board

Subchapter C—Procedural Regulations

[Reg. No. PR-26]

PART 302—RULES OF PRACTICE IN ECONOMIC PROCEEDINGS

INFORMAL MAIL RATE CONFERENCE PROCEDURE

Adopted by the Civil Aeronautics Board at its office in Washington, D. C., on the 27th day of March 1956.

Although the rules of practice governing informal mail rate conferences do not provide for the presentation of oral statements to the Board on unresolved issues, such oral statements have nevertheless been permitted for some time in instances where the Board has deemed it desirable in the interest of further clarification and understanding of the issues. Experience during the period that this practice has been followed has not shown it to be unduly burdensome on the Board or the staff, nor has it impaired the effectiveness of the informal mail rate conference procedure. The carriers' oral statements have normally been confined to one or two major issues and they have regarded this privilege to be of value in clarifying such issues.

Accordingly, the Board finds it appropriate to amend the rules of practice expressly to provide an opportunity for the submission of oral statements whenever the Board in the exercise of its discretion grants such permission.

Since this amendment is not a substantive rule but one of agency procedure, notice and public procedure herein are unnecessary, and the amendment may be made effective on less than 30 days' notice.

In consideration of the foregoing, the Civil Aeronautics Board amends Part 302 of the Procedural Regulations (14 CFR Part 302) as follows effective March 27, 1956:

1. By deleting the last sentence of § 302.318 which reads: "Any participant is at liberty, however, further to urge his contentions by way of memoranda addressed to the Board's staff and may request that such memoranda be presented to the Board as a more effective way of stating his position."

2. By adding in place of the above deleted sentence: "Any party to the mail rate proceeding may, through the Board's staff, request the opportunity to submit a written or oral statement to the Board on any unresolved issue. The Board will grant such requests whenever it deems such action desirable in the interest of further clarification and understanding of the issues. The granting of an opportunity for such further presentation shall not, however, impair the rights that any party might otherwise have under the act and the rules of practice."

(Sec. 205, 52 Stat. 984, as amended; 49 U. S. C. 425. Interprets or applies sec. 406, 52 Stat. 998; 49 U. S. C. 486)

By the Civil Aeronautics Board.[1]

[SEAL] M. C. MULLIGAN,
Secretary.

[F. R. Doc. 56-2426; Filed, Mar. 30, 1956; 8:50 a. m.]

TITLE 29—LABOR

Chapter V—Wage and Hour Division, Department of Labor

PART 688—ARTIFICIAL FLOWER INDUSTRY IN PUERTO RICO

WAGE ORDER GIVING EFFECT TO RECOMMENDATIONS

On January 19, 1956, pursuant to section 5 of the Fair Labor Standards Act of 1938 (52 Stat. 1060, as amended; 29 U. S. C. 201 et seq.), the Secretary of Labor by Administrative Order No. 455 (21 F. R. 405) directed Industry Committee No. 20-C to recommend the minimum rate or rates of wages to be paid under section 6 of the Act to employees engaged in commerce or in the production of goods for commerce in the Artificial Flower Industry in Puerto Rico.

Subsequent to an investigation and hearing, conducted pursuant to notice published in the January 19, 1956, issue of the FEDERAL REGISTER (21 F. R. 405), the Committee filed with the Administrator a report containing its findings of fact and recommendations with respect to the matters referred to it. Accordingly, as authorized and required by section 8 of the Act and General Order No. 45-A (15 F. R. 3290) of the Secretary—(1) these recommendations are hereby published in the following amendments to the Code of Federal Regulations; and (2) effective April 16, 1956, Part 688 of Title 29, is amended to read as follows:

Sec.
688.1 Definition of the industry.
688.2 Wage rates.
688.3 Application and notice.

AUTHORITY: §§ 688.1 to 688.3 issued under sec. 8, 52 Stat. 1064, as amended; 29 U. S. C. 208. Interpret or apply sec. 5, 52 Stat. 1062, as amended; 29 U. S. C. 205.

§ 688.1 *Definition of the industry.* The Artificial Flower Industry in Puerto Rico, to which this part shall apply, is hereby defined as follows: The manufacture and assembling of artificial flowers, buds, berries, foliage, leaves, fruits, plants, stems, and branches.

§ 688.2 *Wage rates.* Wages at the rate of not less than 50 cents an hour shall be paid under section 6 of the Fair Labor Standards Act of 1938, by every employer to each of his employees in the Artificial Flower Industry in Puerto Rico who is engaged in commerce or in the production of goods for commerce.

§ 688.3 *Application and notice.* Wages of not less than the hourly wage rate specified in § 688.2 shall be paid under section 6 of the Fair Labor Standards Act of 1938 by every employer to each of his employees who is engaged in commerce or in the production of goods for commerce in the Artificial Flower Industry in Puerto Rico. Every employer employing any such employees shall post in a conspicuous place in each department of his establishment where any such employees are working such notices of this order as shall be prescribed from time to time by the Administrator of the Wage and Hour Division of the United States Department of Labor and shall give such other notice as the Administrator may prescribe.

Signed at Washington, D. C., this 28th day of March 1956.

NEWELL BROWN,
Administrator,
Wage and Hour Division.

[F. R. Doc. 56-2420; Filed, Mar. 30, 1956; 8:49 a. m.]

TITLE 32—NATIONAL DEFENSE

Chapter I—Office of the Secretary of Defense

Subchapter N—Transportation

PART 212—MOTOR COMMON CARRIER FACILITIES QUESTIONNAIRE (DD FORM 677)

Sec.
212.1 Purpose.
212.2 Applicability.
212.3 General.

AUTHORITY: §§ 212.1 to 212.3 issued under sec. 202, 61 Stat. 500, as amended; 5 U. S. C. 171.

§ 212.1 *Purpose.* This part prescribes a revised DD Form 677 (Motor Common Carrier Facilities Questionnaire), to be used by the military departments in securing certain essential information from motor common carriers.

§ 212.2 *Applicability.* This part is applicable to all departments within the Department of Defense.

§ 212.3 *General.* (a) DD Form 677[1] will be used by appropriate central traffic offices of the military departments for obtaining certain information required in routing freight shipments via motor common carriers (excluding household goods carriers) within the Continental United States. It will not ordinarily be used by individual shipping activities.

(b) The revision of DD Form 677[1] is not to be construed as requiring carriers to resubmit information which is now in the files of the military departments.

R. C. LANPHIER, Jr.,
Acting Assistant Secretary of Defense (Supply and Logistics).

[F. R. Doc. 56-2404; Filed, Mar. 30, 1956; 8:46 a. m.]

Chapter V—Department of the Army

Subchapter C—Military Education

PART 542—SCHOOLS AND COLLEGES

MISCELLANEOUS AMENDMENTS

1. In § 542.3 (a), revise paragraph 8 of application form, and revise § 542.3 (b), as follows:

§ 542.3 *Application.* (a) When an educational institution which is not receiving Government assistance under the provisions of the act of Congress cited in § 542.1, desires to receive such assistanee, the authorities of the institution will submit an application in substantially the following form to the army commander:

* * * * *

8. The authorities of the institution will provide suitable storage facilities for all Government property issued to the institution and will take such measures as are necessary to properly care for the same; they will cause to be executed, on a blank form to be furnished by the army commander, a bond in such amount as the Army commander determines necessary for the care and safekeeping of the Government property to be issued, and for its return when required.

Signature_____
(Head of institution)

[1] Vice Chairman Adams dissenting.

[1] Filed as part of original document.

(b) Upon receipt of the application, the army commander will have inspection of the instituton accomplished to determine whether the requirements for the establishment of a 55c unit are fulfilled. The application, together with report of such inspection, and comments and recommendations of the army commander regarding approval or disapproval of application, will be submitted to The Adjutant General, Department of the Army, Washington 25, D. C., Attn: AGPB–O. Upon approval of the application by the Department of the Army, requisitions for appropriate equipment will be made by the institution on DA Form 445 (Requisition), and will be forwarded to the army commander for approval. After the value of all property to be issued to the institution has been determined, a bond in such amount as the Army commander determines necessary in accordance with § 542.12, will be furnished by the institution to the army commander. Upon receipt of the bond, the army commander will forward the requisitions to appropriate distribution depots for supply action. All expenses incident to the supply units established under the provisions of the regulations of this part will be borne from ROTC funds allocated to the heads of technical services, and army commanders when appropriate.

2. A new § 542.5a is prescribed, as follows:

§ 542.5a *Use of Reserve Officers as military instructors.* When authorized by commander of the area or his designated representative, Reserve officers not on active duty may be utilized to give military instruction in 55c schools.

3. In § 542.11, revise paragraphs (a) (3), (b) (4), (c) (1) (i), and (d) to read as follows:

§ 542.11 *Government property.* * * *

(a) *Accounting.* * * *

(3) Accounting records will conform to principles in AR 735–5 (Army regulations prescribing general principles and policies of property accountability) and will be maintained generally in accordance with procedures prescribed in AR 145–421 (ROTC supply and accounting procedure) for educational institutions maintaining ROTC units.

(b) *Lost, destroyed, or damaged.*

* * * * *

(4) Reports of loss, theft, and recovery of Government property issued to institutions as prescribed in this part will be initiated and processed as set forth in SR 210–10–10 (Special Regulations of the Army covering the reporting of loss, theft, and recovery of Government property).

(c) *Inventories*—(1) *By whom and when made.* (i) Inventories of all Government property at each institution will be made at least once each year by the official of the institution authorized to account for the property in accordance with AR 735–5 (Army regulations prescribing general principles and policies of property accountability). This annual inventory will be made during the period between the close of the spring term of one academic year and the opening of the fall term of the following academic year. An Army officer on active duty designated by the army commander will assist at the inventory, and will verify entry of inventory balances.

* * * * *

(d) *Overages and shortages.* Any overages disclosed by the inventory will be taken upon the stock record account of the institution as "Found at School". Report of survey will be initiated to cover all shortages disclosed by the inventory unless the authorities of the institution acknowledge liability for the loss and make payment therefor as contemplated in paragraph (b) (3) of this section.

4. Revise § 542.12 and revoke § 542.13 as follows:

§ 542.12 *Bonds.* (a) A bond for the care and safekeeping of Government property issued, and for its return when required, will be furnished to, and filed by, the army commander on DA Form 1622 (Bond for Safekeeping of Property Issues to Educational Institutions Under section 47 or section 55c, National Defense Act of June 3, 1916, as amended) after approval thereof by the Army Judge Advocate as to legal sufficiency, form, and correctness of execution. Where appropriate, DA Form 1622–1 (Affidavits of Individual Sureties) will be executed and made a part of the bond.

(b) The appropriate army commander will determine the amount of the bond which is deemed adequate to protect the interest of the Government in the property involved. In making such determination, consideration will be given to the quantity, value, and type of property issued, the administrative controls prescribed by the institution and their effectiveness, and the loss experience at the institution. Adjustment of the bond may be authorized or directed by the Army commander whenever considered necessary.

(c) Army commanders may authorize the acceptance of bonds without surety thereon when, upon satisfactory showing of its financial responsibility, the bond of the principal without surety is deemed ample security to protect the interest of the Government. The financial resources of the institution, its credit standing, and such other factors as are pertinent should be considered in determining the financial responsibility of the institution in this connection.

(d) The high schools of the District of Columbia are not required to furnish bond as prescribed in paragraphs (a) and (b) of this section. See act 3 March 1925 (43 Stat. 1232).

(e) Bonds furnished in accordance with the foregoing instructions will be terminated when there is no need for their continuance, and will be kept on file at Army headquarters. Notice of such termination will be sent to institutions concerned.

(f) Where a bond presently in force conforms to the requirements set forth in this section, no change is required. The bond form prescribed in paragraph (a) of this section will be used when a new bond is required.

§ 542.13 *Property.* [Revoked]

[C5, AR 350–250, 13 March 1956] (41 Stat. 780; 10 U. S. C. 1180, 1181)

[SEAL] JOHN A. KLEIN,
Major General, U. S. Army,
The Adjutant General.

[F. R. Doc. 56–2399; Filed, Mar. 30, 1956; 8:45 a. m.]

Chapter VII—Department of the Air Force

Subchapter F—Reserve Forces

PART 861—OFFICERS' RESERVE

MISCELLANEOUS AMENDMENTS

In § 861.1101 paragraph (b) (2) is revised and in § 861.1103 (a) and (b), new subparagraphs (3) are added respectively as follows:

§ 861.1101 *Purpose and policy.* * * *

(b) *Policy.* * * *

(2) *Uniform.* To be eligible for inactive duty training pay, Reservists will wear the uniform while participating in training for which pay is authorized. Exceptions to this requirement will be authorized only when Reservists assigned to Training Category A Reserve units are required to report for unit training assemblies under test alert conditions and reporting in proper uniform is impracticable. Members reporting for the test alert out of uniform will be considered as being on duty in uniform for purpose of pay and allowances.

* * * * *

§ 861.1103 *Methods of qualifying.*

(a) *Airmen.* * * *

(3) They are present at a unit test alert.

(b) *Officers.* * * *

(3) They are present at a unit test alert. The 60 percent attendance provisions outlined in subparagraphs (1) and (2) of this paragraph do not apply in this case.

* * * * *

(Sec. 251, 66 Stat. 495; 50 U. S. C. 1002. Interpret or apply secs. 101–259, 601–603, 66 Stat. 481–498, 501; 50 U. S. C. 901–1010, 1091–1093) [AFR 45–10A, 6 March 1956]

[SEAL] E. E. TORO,
Colonel, U. S. Air Force,
Air Adjutant General.

[F. R. Doc. 56–2398; Filed, Mar. 30, 1956; 8:45 a. m.]

TITLE 32A—NATIONAL DEFENSE, APPENDIX

Chapter I—Office of Defense Mobilization

[Defense Mobilization Order I–22]

DMO I–22—ASSIGNMENT OF DEFENSE MOBILIZATION RESPONSIBILITIES TO THE FEDERAL HOME LOAN BANK BOARD

By virtue of the authority vested in me pursuant to the National Security Act of 1947, as amended; Reorganization Plan No. 3, effective June 12, 1953; the Defense Production Act of 1950, as amended; Executive Order 10480 of August 14, 1953;

and in order to facilitate the development and coordination of Federal policies and programs for current defense activities and readiness for any future mobilization, it is hereby ordered:

1. The Federal Home Loan Bank Board (hereinafter referred to as the Bank Board will be responsible for the development of national security preparedness measures relating to savings and loan credit policies and programs. The Bank Board will cooperate in this work with the Federal Reserve Board to the extent necessary to reflect Bank Board views and ensure general coordination of savings and loan credit policies and programs with basic national policies under conditions of mobilization. Likewise, with the cooperation of the Department of the Treasury the Bank Board will develop national security preparedness programs relating to the operations of the Federal Home Loan Bank System (hereinafter referred to as the Bank System).

2. Among the measures for which the Bank Board will be responsible are the following:

(a) Development of plans and regulations with respect to the Bank System for appropriate general and selective credit controls to curb inflationary pressures during various types of mobilization emergencies.

(b) Preparation, in cooperation with the Department of the Treasury, of plans for availability of savings and the provision for essential credit to the members of the Bank System under conditions of attack.

(c) Development of plans to encourage preparedness measures by the members of the Bank System designed to support continuity of operations of the System in the event of enemy attack, including the preservation of essential records.

(d) Development and maintenance of specific plans to assure the continuity of the essential functions of the Bank System in the event of an attack on the United States.

3. Such preparedness measures will be undertaken on a basis consistent with defense mobilization assumptions and objectives for the Government as a whole. To assure such consistency and coordinated planning, proposed programs will be submitted to the Director of the Office of Defense Mobilization or developed jointly.

OFFICE OF DEFENSE MOBILIZATION,
ARTHUR S. FLEMMING,
Director.

[F. R. Doc. 56-2403; Filed, Mar. 30, 1956; 8:46 a. m.]

PROPOSED RULE MAKING

INTERSTATE COMMERCE COMMISSION

[49 CFR Parts 73, 78]

[Docket No. 3666; Notice 24]

TRANSPORTATION OF EXPLOSIVES AND OTHER DANGEROUS ARTICLES

NOTICE OF PROPOSED RULE MAKING

FEBRUARY 23, 1956.

The Commission is in receipt of applications for early amendment of the above-entitled regulations insofar as they apply to shippers in the preparation of articles for transportation, and to all carriers by rail and highway. The proposed amendments are set forth below and the reasons therefor are listed in the appendix hereto.

Application for these amendments ordinarily would be considered at our next hearing in this docket. It appears, however, that the proposed amendments have been the subject of exchanges and study by interested parties, in which substantial agreement has been reached. In view thereof no oral hearing is contemplated at this time.

Any party desiring to make representations in favor of or against the proposed amendments may do so through the submission of written data, views, or arguments. The original and five copies of such submission may be filed with the Commission on or before April 2, 1956. The proposed amendments are subject to change or changes that may be made as a result of such submissions.

Notice to the general public will be given by depositing a copy of this notice in the Office of the Secretary of the Commission for public inspection, and by filing a copy of the notice with the Director, Division of the Federal Register.

By the Commission, Division 3.

[SEAL] HAROLD D. McCOY,
Secretary.

PART 73—SHIPPERS

SUBPART A—PREPARATION OF ARTICLES FOR TRANSPORTATION BY CARRIERS BY RAIL FREIGHT, RAIL EXPRESS, HIGHWAY OR WATER

Amend § 73.31 paragraph (a) table and notes thereto; paragraph (c); paragraph (f); entire paragraph (g); paragraph (h); cancel note 1 to paragraph (l) (19 F. R. 3258, June 3, 1954) (18 F. R. 802, Feb. 7, 1953) (16 F. R. 9373, Sept. 15, 1951) (20 F. R. 10162, Dec. 31, 1955) (20 F. R. 4413, June 23, 1955) (17 F. R. 9835, Nov. 1, 1952) (15 F. R. 8278, Dec. 2, 1950) (49 CFR 1950 Rev, 1954 Supp., 73.31) to read as follows:

§ 73.31 *Qualification, maintenance, and use of tank cars.* (a) * * *

Where these regulations call for specifications Nos.—	These specification containers may also be used subject to the provisions of the following notes—
103 [4] [5] and 103-W [4] [5]	ARA-II [1] [4] [6] III [4] [5] and IV.[5]
103A [4] and 103A-W [4]	ARA-II [2] [4] and III.[2] [4]
103B [4] and 103B-W [4]	ARA-II [4] and III [4] rubber lined.
103C-W	103C.[8]
104 [4] and 104-W [4]	ARA-IV.[4]
105A100 and 105A100-W.	104A [7] and 104A-W.[7]
105A100-AL-W	104A-AL-W.[7]
105A300-W	ARA-V,[3] ICC-105 [3] and 105A300.[3]
106A500 and 106A500-X.	ICC-27 tanks mounted on a car and classified as multi-unit tank prior to Oct. 1, 1930.[6]
106A800 and 106A800-X.	None.
106A800NCI	None.
107A****	None.

[2] Tank must be tested to a pressure of 60 pounds per square inch and safety valves be set to open at a pressure of 25 pounds per square inch.

[2] Tanks and their appurtenances must have been originally designed or subsequently reconstructed for the transportation of acids.

[3] Safety valves on these cars must be set to open at a pressure not exceeding 225 pounds per square inch.

[4] Tank cars equipped with safety vents must have the vent closure so chained or otherwise fastened as to prevent misplacement.

[5] These cars must not be used for shipments of smokeless powder in water unless equipped with positive closure type bottom outlet valves.

[6] Tanks made under specification BE-27 and mounted on a car, and classified as multi-unit tank cars prior to October 1, 1930, may be continued in service until further order of the Commission, provided they have been properly retested and are fitted with valves, valve protection devices, and safety devices of approved type.

[7] Tanks must be restenciled to proper 105A-100, 105A100-W or 105A100AL-W classifications within 2 years.

[8] Tanks authorized under I. C. C. Special Orders of Nov. 5, 1937, and Nov. 14, 1939, may be continued in service as provided by order and revision thereof.

* * * * *

(c) For detailed procedure to be followed in making repairs or alterations to tanks of all tank car classifications, together with methods of filing application for securing approval from the Secretary of the Mechanical Division, Association of American Railroads, see Appendix R, Association of American Railroads Code for Repairs to Tank Car Tanks.

* * * * *

(f) After alterations of tank cars or equipment therefor from original design, a certificate of compliance with the specifications, similar to that required in specifications 103, 103W, 105A100, 105A100-W, 105A300, 105A300-W, 106A500, 107A, and 110A500-W (§§ 78.265, 78.280, 78.270, 78.285, 78.271, 78.286, 78.275, 78.277, and 78.293 of this chapter), respectively, must be furnished to the car owner, to the Bureau of Explosives, and to the Secretary, Mechanical Division, Association of American Railroads.

(g) Tanks, interior heater systems and safety valves must be retested at intervals of time as specified in Retest Tables 1, 2, and 3.

(1) Each tank must be retested by completely filling the tank and manway nozzle, or expansion dome, with water or other liquid of similar viscosity having a temperature which must not exceed 100 degrees Fahrenheit during retest and applying a pressure as specified. The specified pressure must be held for the minimum period prescribed without leakage or evidence of distress. Calking of welded joints to stop leaks developed during retests is prohibited. Tanks in service 10 years or over must be internally inspected and interior heater systems inspected for defects which would make leakage or failure probable during transit.

(2) Anchor rivet housings, if used, must not be removed during retest. They shall be retested by applying an air pressure of 100 pounds per square inch through openings in the tank shell and must show no leakage.

(3) The tank lagging and jacket need not be removed unless leakage is indicated by a drop in pressure. When lagging is not removed, the prescribed test pressure must be held for the minimum number of minutes shown in Tables 1 and 3 for tests under this condition.

(4) Interior heater systems shall be retested with hydrostatic pressure and shall be tight at 200 pounds per square inch.

(5) Retests of exterior heater systems is not a specification requirement.

(6) Retest of safety valves: Each valve must be retested by air, or inert gas and must open at the prescribed pressure within tolerances specified or below maximum pressure permitted and must be vapor tight at or above prescribed limits. See Tables 1, 2, and 3.

(7) Repairs: Tanks must be retested before being returned to service after any repairs requiring welding, riveting or calking of rivets. Rubber lined tanks must be retested before lining is renewed. Interior heater systems must be retested after repairs or renewals of any part of heater systems.

(8) Retests of all tanks and safety valves must be certified by party making tests to owners of tank cars and to the Bureau of Explosives. Certifications must show initials and numbers of cars, pressure to which tested, date of test, place of test, and by whom test is made.

(9) Periodic retests of metal tanks, safety valves and interior heater systems, except cars in chlorine service and tanks to specifications ICC-106A500, 106A500X, 106A800, 106A800X, 106A800-NCI, 107A**** or 110A500-W, may be made at any time during the calendar year the retest falls due.

TABLE 1—RETEST PERIODS AND PRESSURES

Classification	Tank retests				Safety valve retest (years)	Interior heater systems retest				Tank test (p. s. i.)	Safety valve (p. s. i.[e])	Safety valve vapor tight (p. s. i.) (minutes)	Retest holding time (minutes)	Test time when lagging is not removed (minutes)
	Up to 10 years	10 to 22 years	Over 10 years	Over 22 years		Up to 10 years	10 to 22 years	Over 10 years	Over 22 years					
ICC-103	10		10		10	10		10		60	*35	28	10	20
ICC-103A [d]	5	3		1	None	5	3		1	60			10	20
ICC-103B [f]	None	None		None	None	5	3		1	60				
ICC-103C [e d]	5	3		1	(e)	5	3		1	60	*45		10	20
ICC-104	10		10		10	10		10		60	*35	28	10	20
ICC-105 [a]	10		10		5					500	225	180	30	30
ICC-105A100	10		10		5					100	75	60	10	20
ICC-105A300 [a]	10		10		5					300	225	180	30	30
ICC-105A400 [a]	10		10		5					400	300	240	30	30
ICC-105A500 [b a]	10		10		5					500	375	300	30	30
ICC-105A600 [b a]	10		10		5					600	450	360	30	30
ICC-103-W	10		10		10	10		10		60	*35	28	10	20
ICC-103A-W [d]	5	3		1	None	5	3		1	60			10	20
ICC-103B-W [f]	None	None		None	None	5	3		1	60				
ICC-103B100-W [f]	None		None		5					100	75	60	10	20
ICC-103C-W [e d]	5	3		1	(e)	5	3		1	60	35	28	10	20
ICC-103D-W [e d]	5	3		1	(e)	5	3		1	60	35	28	10	20
ICC-103E-W [e d]	5	3		1	(e)	5	3		1	60	35	28	10	20
ICC-103A-N-W [e d]	5	3		1	None	5	3		1	60			10	20
ICC-103AL-W	10		10		10	10		10		60	*35	28	10	20
ICC-103A-AL-W [e d]	5	3		1	(e)	5	3		1	60	35	28	10	20
ICC-104-W	10		10		10	10		10		60	*35	28	10	20
ICC-105A100-AL-W	10		10		5	10		10		100	75	60	10	20
ICC-105A300-AL-W	10		10		5					300	225	180	30	30
ICC-105A100-W	10		10		5	10		10		100	75	60	10	20
ICC-105A300-W [a]	10		10		5					300	225	180	30	30
ICC-105A400-W [a]	10		10		5					400	300	240	30	30
ICC-105A500-W [b a]	10		10		5					500	375	300	30	30
ICC-105A600-W [b a]	10		10		5					600	450	360	30	30
ICC-109A300-W	10		10		5					300	225	180	30	30

[a] Tanks and safety valves in chlorine service must be retested every 2 years.

[b] Special requirements for carbon dioxide: Valves must be retested at pressure required for new construction.

[c] Safety valves indicated with * are set at specified pressure plus or minus 3 p. s. i. All other valves must be open at a pressure not exceeding that specified.

[d] A commodity for which the tank is approved may be used for filling tank and dome when retesting tanks in service not over 10 years.

[e] Safety valve retest period is same as tank retest period.

[f] Tanks must be retested before rubber lining is renewed or before being returned to service after any repairs requiring welding, riveting or calking of rivets.

TABLE 2—RETEST PERIODS AND PRESSURES

Classification	Tank retest (years [a b])	Safety valves (years [c])	Tank test			Safety valve (p. s. i.)	Safety valve vapor tight (p. s. i.)
			Holding time minimum (seconds)	Hydrostatic displacement test (p. s. i.)	Air test for leaks (p. s. i.)		
ICC-106A500	5	2	30	500	100	375	300
ICC-106A500X	5	2	30	500	100	375	300
ICC-106A800	5	2	30	800	100	600	480
ICC-106A800X	5	2	30	800	100	600	480
ICC-106A800NCI	5	2	30	800	100	600	480
ICC-107A****	5	[f] 2	30	(d)	None	(e)	(e)
ICC-110A500-W	[g] 5	2	10 minutes	500 hydrostatic		375	300

[a] Tank must be condemned when it leaks or permanent expansion exceeds 10 percent of the total expansion.

[b] Reports giving data showing results of these retests must be rendered by the party making the test to the owner of the tank and to the Bureau of Explosives, and each tank passing the test must be marked with the date (month and year) plainly and permanently stamped into the metal of one head or chime. For example, 1–54 for January 1954. Dates of previous tests must not be obliterated. (On ICC–107A**** tanks date should be stamped into metal of marked end.)

[c] Safety vents of the frangible disc and fusible plug types must be inspected after each loaded trip of tank as follows: Remove at least 1 vent for visual inspection and if it shows signs of deterioration, all the vents must be removed and inspected and those which do not meet the requirements must be renewed. See Note f for ICC–107A**** tanks.

[d] Each tank must be tested to a pressure at least equal to the marked test pressure of the tank.

[e] Safety valve must open at a pressure not exceeding the marked test pressure of the tank and must be vapor tight at 80 percent of the marked test pressure of the tank.

[f] ICC–107A**** tanks used for transportation of flammable gasses must have safety devices of valve type retested once in every 2 years as prescribed. When safety devices of frangible disc type are used, 1 from each car must be tested as prescribed.

[g] Tank must be condemned when it leaks or shows evidence of distress during hydrostatic test.

TABLE 3—(AAR CLASSIFICATIONS) RETEST PERIODS AND PRESSURES

Classification	Tank retests				Safety valve retest (years)	Interior heater systems retest				Tank test (p. s. i.)	Safety valve (p. s. i.[b])	Safety valve vapor tight (p. s. i. minutes)	Retest holding time (minutes)	Test time when lagging is not removed (minutes)
	Up to 10 years	10 to 22 years	Over 10 years	Over 22 years		Up to 10 years	10 to 22 years	Over 10 years	Over 22 years					
AAR-II				10	10				10	60	*25	20	10	20
AAR-II Acid [1]				1	None				1	60			10	20
AAR-II R. L.[2 c]				None	None				1	60				
AAR-III				10	10				10	60	*25	20	10	20
AAR-III Acid [1]				1	None				1	60			10	20
AAR-III R. L.[2 c]				None	None				1	60				
AAR-IV				10	10				10	60	*25	20	10	20
AAR-IVA				10	5					100	*35	28	20	20
AAR-V [a]				10	5					300	225	180	30	
AAR-201A35	10		10		10			10		35	*15	12	10	
AAR-203	10		10		10			10		60	*35	28	10	20
AAR-201A35-W	10		10		10			10		35	*15	12	10	
AAR-203-W	10		10		10			10		60	*35	28	10	20
AAR-205A300-W	10		10		5					300	225	180	30	
AAR-201A70-W	10		10		10			10		70	*35	28	10	

[1] Unlined acid tanks.

[2] Rubber lined tanks.

[a] Tanks and safety valves in chlorine service must be retested every 2 years.

[b] Safety valves indicated with * are set at specified pressure plus or minus 3 p. s. i. All other valves must be open at a pressure not exceeding that specified.

[c] Tanks must be retested before rubber lining is renewed or before being returned to service after any repairs requiring welding, riveting or calking of rivets.

(h) Tank cars and appurtenances may be used for the transportation of any commodity for which they are authorized, as indicated on the certificate of construction. When a car is to be used for the transportation of a commodity other than those approved on the certificate of construction, it must be approved for such loading by the A. A. R. Tank Car Committee. Changes in fittings on commodity stenciling required to transfer a car from one service to another as authorized on the certificates of construction may be made only by the owner or owner's authorized agent; except, that where no change in fittings or other appurtenances is necessary, ICC–103, 103–W, 103AL–W, 103A, 103A–W, 103A–AL–W, 103A–N–W, 103B, 103B–W, 103C, 103C–W, 103D–W, and 103E–W (§§ 78.265, 78.280, 78.291, 78.266, 78.281, 78.292, 78.299, 78.267, 78.282, 78.268, 78.283, 78.297, and 78.298 of this chapter) tank cars may be transferred from one commodity service to another when authorized for the transportation of such commodity by this part.

NOTE 1: For qualification of cylinders and tank cars for compressed gases see §§ 73.34, 73.301 (g), and 73.314.

* * * * *

(l) * * *

[Note 1 canceled.]

SUBPART C—FLAMMABLE LIQUIDS; DEFINITION AND PREPARATION

1. Amend § 73.119 paragraph (a) (12); cancel paragraph (a) (13) and (18); amend paragraphs (e) (2) and (f) (3) (17 F. R. 7280, 7281, Aug. 9, 1952) (16 F. R. 5323, June 6, 1951) (15 F. R. 8298, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 73.119) to read as follows:

§ 73.119 *Flammable liquids not specifically provided for.* (a) * * *

(12) Spec. 103, 103–W, 103AL–W, 103D–W, 104, 104–W, 105A100, 105A100–W, 105A100AL–W, 105A300, 105A300–W, 105A400, 105A400–W, 105A500, 105A500–W, 105A600, 105A600–W, ARA–II,[2] ARA–III,[2] ARA–IV,[2] or ARA–IV–A[2] (§§ 78.265, 78.280, 78.291, 78.269, 78.284, 78.270, 78.285, 78.294, 78.271, 78.286, 78.272, 78.287, 78.273, 78.288, 78.274, or 78.289 of this chapter). Tank cars. For cars equipped with expansion domes, manhole closures must be so designed that pressure will be released automatically by starting the operation of removing the manhole cover. (See § 73.432 for shipping instructions.)

(13) [Canceled.]

* * * * *

(18) [Canceled.]

* * * * *

(e) * * *

(2) Spec. 103, 103–W, 103AL–W, 103D–W, 104, 104–W, 105A100, 105A100–W, 105A300, 105A300–W, 105A400, 105A400–W, 105A500, 105A500–W, 105A600, 105A600–W, ARA–II,[2] ARA–III,[2] ARA–IV,[2] or ARA–IV–A[2] (§§ 78.265, 78.280, 78.291, 78.297, 78.269, 78.284, 78.270, 78.285, 78.271, 78.286, 78.272, 78.287, 78.273, 78.288, 78.274, and 78.289 of this chapter). Tank cars. Cars having expansion domes must be equipped with manhole closures, identification marks, and dome placards as prescribed in paragraphs (f) (4), (g), (h), and (h) (1) of this section. (See Note 1 of paragraph (f) (3) of this section.)

* * * * *

(f) * * *

(3) Spec. 105A100, 105A100–W, 105A300, 105A300–W, 105A400, 105A400–W, 105A500, 105A500–W, 105A600, 105A600–W, or ARA–IV–A[2] (§§78.270, 78.285, 78.271, 78.286, 78.272, 78.287, 78.273, 78.288, 78.274, and 78.289 of this chapter) (see Note 1 of this subparagraph). Tank cars. Spec. 104 (§ 78.269 of this chapter) and ARA–IV[2] tank cars are authorized under the conditions prescribed in paragraphs (f) (4), (g), (h), and (h) (1) of this section and Note 3 of this subparagraph.

[No change in Notes.]

* * * * *

2. Amend § 73.123 paragraph (a) (5) (15 F. R. 8301, Dec. 2, 1950) (49 CFR 73.123, 1950 Rev.) to read as follows:

§ 73.123 *Ethyl chloride.* (a) * * *

(5) Spec. 105A100, 105A100–W, 105A300, 105A300–W, 105A400, 105A400–W, 105A500, 105A500–W, 105A600, 105A600–W, or ARA–IV–A[1] (§§ 78.270, 78.285, 78.271, 78.286, 78.272, 78.287, 78.273, 78.288, 78.274, and 78.289 of this chapter). Tank cars. See Note 1 of § 73.119 (f) (3). (See § 73.432 for shipping instructions.)

* * * * *

3. Amend § 73.124 paragraphs (a) (5) and Note 1 thereto, and (a) (6) (16 F. R. 5324, June 6, 1951) (15 F. R. 8301, Dec. 2, 1950) (16 F. R. 9374, Sept. 15, 1951) (49 CFR 1950 Rev., 1954 Supp., 73.124) to read as follows:

§ 73.124 *Ethylene oxide.* (a) * * *

(5) Spec. 105A100, 105A100–W, or ARA–IV–A[1] (§§ 78.270, or 78.285 of this chapter). Tank cars. See Note 1 of § 73.119 (f) (3). (See § 73.432 for shipping instructions.)

NOTE 1: Because of the present emergency and until further order of the Commission, specification ARA–IV[1] and ICC–104 and 104–W (§§ 78.269 and 78.284 of this chapter) tank cars, converted as follows, are authorized for use. Tanks must be tested to 75 pounds per square inch hydrostatic pressure and show no leakage with lagging removed. Bottom discharge outlet must be removed, the opening closed with a riveted plate, and a sump applied. Safety valves must be removed and replaced by two safety valves of the type and size used on ICC–105A100 or 105A100–W (§§ 78.270 or 78.285 of this chapter) tank cars but set to open at 60 pounds per square inch instead of 75 pounds. The various approved dome fittings now required on ICC–105A100 or 105A100–W (§§ 78.270 or 78.285 of this chapter) tank cars, must be installed in an approved manner to provide for the loading, unloading, gauging, sampling, and taking of temperature of contents without removing the manhole closure. Tank jacket must be stenciled immediately above the mark ARA–IV[1], ICC–104, or ICC–104–W (§§ 78.269 or 78.284 of this chapter) with the words "For Ethylene Oxide Only".

(6) Spec. 105A300, 105A300–W, 105A400, 105A400–W, 105A500, 105A500–W, 105A600, or 105A600–W (§§ 78.271, 78.286, 78.272, 78.287, 78.273, 78.288, 78.274, or 78.289 of this chapter). Tank cars. Tanks must be restenciled 105A100 or 105A100–W and be equipped with safety valves of the type and size used on 105A100 and 105A100–W tank cars. See Note 1 of § 73.119 (f) (3). (See § 73.432 for shipping instructions.)

* * * * *

SUBPART E—ACIDS AND OTHER CORROSIVE LIQUIDS; DEFINITION AND PREPARATION

1. Amend § 73.247 paragraphs (a) (11) and (13) (15 F. R. 8314, Dec. 2, 1950) (18 F. R. 6778, Oct. 27, 1953) (49 CFR 1950 Rev., 1954 Supp., 73.247) to read as follows:

§ 73.247 *Acetyl chloride, antimony pentachloride, benzoyl chloride, benzyl chloride, pyro sulfuryl chloride, silicon chloride, sulfur chloride (mono and di), sulfuryl chloride, thionyl chloride, tin tetrachloride (anhydrous), and titanium tetrachloride.* (a) * * *

(11) Spec. 103A–N–W (§ 78.299 of this chapter) tank cars. Unstabilized anhydrous benzyl chloride must be free from impurities such as iron. All cast metal parts of the tank in contact with the lading must have a minimum nickel content of approximately 96.7 percent.

* * * * *

(13) Spec. 103A or 103A–W (§§ 78.266 or 78.281 of this chapter) tank cars. Tank cars, nickel clad at least 10 percent, authorized for stabilized benzyl chloride only. Acetyl chloride, benzoyl chloride, pyro sulfuryl chloride, sulfuryl chloride, and thionyl chloride when shipped in unstabilized condition, must be anhydrous and free from impurities such as iron.

2. Amend § 73.249 paragraph (a) (5) (15 F. R. 8314, Dec. 2, 1950) (49 CFR 73.249, 1950 Rev.) to read as follows:

§ 73.249 *Alkaline corrosive liquids, n. o. s., alkaline caustic liquids, n. o. s., and alkaline battery fluids.* (a) * * *

(5) Spec. 103, 103–W, 103A, 103A–W, 104, 104–W, 105A100, or 105A100–W (§§ 78.265, 78.280, 78.266, 78.281, 78.269, 78.284, 78.270, or 78.285 of this chapter). Tank cars.

* * * * *

3. Amend § 73.254 paragraph (a) (4) (20 F. R. 951, Feb. 15, 1955) (49 CFR 73.254, 1950 Rev.) to read as follows:

§ 73.254 *Chlorosulfonic acid and mixtures of chlorosulfonic acid-sulfur trioxide.* (a) * * *

(4) Spec. 103A, 103A–W, 103C–W, or 103E–W (§§ 78.266, 78.281, 78.283, or 78.298 of this chapter). Tank cars.

* * * * *

4. Amend § 73.263 paragraph (a) (9) (17 F. R. 9837, Nov. 1, 1952) (49 CFR 1950 Rev., 1954 Supp., 73.263) to read as follows:

§ 73.263 *Hydrochloric (muriatic) acid, hydrochloric acid mixtures, and sodium chlorite solution.* (a) * * *

(9) Spec. 103B or 103B–W (§§ 78.267 or 78.282 of this chapter). Tank cars. Authorized for acid not over 38 percent strength by weight. Except for hydrochloric (muriatic) acid of 22° Baume strength, and other fuming acids, safety vent of approved design equipped with frangible disc having ⅛ inch breather hole in the center thereof or a safety vent of approved design equipped with carbon

discs permitting continuous venting may be used.

* * * * *

5. Amend § 73.264 paragraph (a) (8); cancel paragraph (a) (13) (20 F. R. 4417, June 23, 1955) (15 F. R. 8317, Dec. 2, 1950) (49 CFR 73.264, 1950 Rev.) to read as follows:

§ 73.264 *Hydrofluoric acid.* (a) * * *

(8) Spec. 103A, 103A–W, 105A100, 105A100–W, 105A300, 105A300–W, 105A–400, 105A400–W, 105A500, 105A500–W, 105A600, 105A600–W, or ARA–IV–AI (§§ 78.266, 78.281, 78.270, 78.285, 78.271, 78.286, 78.272, 78.287, 78.273, 78.288, 78.274, and 78.289 of this chapter). Unlined metal tanks which have been subjected to adequate passivity or neutralization process. (See Note 1 to subparagraph (7) of this paragraph.) Authorized only for acid of 60 to 80 percent strength. If tanks are washed out with water they must be resubjected to passivity before reshipment.

* * * * *

(13) [Canceled.]

* * * * *

6. Cancel paragraph (a) (4) in § 73.265 (15 F. R. 8318, Dec. 2, 1950) (49 CFR 73.265, 1950 rev.)

§ 73.265 *Hydrofluosilicic acid.* (a) * * *

(4) [Canceled.]

* * * * *

7. In § 73.268 amend paragraph (b) (1); cancel paragraph (b) (2); add paragraph (c) (2) (17 F. R. 4294, May 10, 1952) (15 F. R. 8319, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 73.268) to read as follows:

§ 73.268 *Nitric acid.* * * *

(b) * * *

(1) Spec. 103C, 103C–W, or 103E–W (§§ 78.268, 78.283, or 78.298 of this chapter). Tank cars.

(2) [Canceled.]

* * * * *

(c) * * *

(2) Spec. 103A–AL–W (§ 78.292 of this chapter). Tank car.

* * * * *

8. Amend § 73.271 paragraph (a) (7) (15 F. R. 8321, Dec. 2, 1950) (49 CFR 73.271, 1950 Rev.) to read as follows:

§ 73.271 *Phosphorus oxychloride, phosphorus trichloride, and thiophosphoryl chloride.* (a) * * *

(7) Spec. 103A, 103A–W, or 103A–N–W (§§ 78.266, 78.281, or 78.299 of this chapter). Tank cars, when the tanks of these cars are lead-lined or the tanks are made of solid nickel at least 99 percent pure and all cast metal parts of the tank in contact with the lading have a minimum nickel content of approximately 96.7 percent.

* * * * *

9. Amend § 73.272 paragraph (h) (3) (15 F. R. 8321, Dec. 2, 1950) (49 CFR 73.272, 1950 Rev.) to read as follows:

§ 73.272 *Sulfuric acid.* * * *

(h) * * *

(3) Spec. 103A or 103A–W (§ 78.266 or § 78.281 of this chapter). Tank cars. Sulfuric acid, except oleum, mixed acid (nitric and sulfuric) (nitrating acid), and other fuming acids, may be transported in ICC–103A tank cars having safety vents equipped with lead discs having a ⅛ inch breather hole in the center thereof.

* * * * *

10. Amend § 73.289 paragraph (a) (2) (20 F. R. 8102, Oct. 28, 1955) (49 CFR 73.289, 1950 Rev.) to read as follows:

§ 73.289 *Formic acid and formic acid solutions.* (a) * * *

(2) Spec. 103C–W or 103E–W (§§ 78.283 or 78.298 of this chapter). Tank cars stenciled "For Formic Acid Only".

* * * * *

11. Amend § 73.291 paragraph (a) (8) (15 F. R. 8324, Dec. 2, 1950) (49 CFR 73.291, 1950 Rev.) to read as follows:

§ 73.291 *Flame retardant compound, liquid.* (a) * * *

(8) Spec. 103B or 103B–W (§ 78.267 or 78.282 of this chapter). Tank cars.

SUBPART F—COMPRESSED GASES; DEFINITION AND PREPARATION

In § 73.314 amend the following entries in paragraph (a) Table as indicated; amend Notes 2 and 9 to paragraph (a) Table; amend paragraph (b) (19 F. R. 8528, Dec. 14, 1954) (16 F. R. 9377, Sept. 15, 1951) (15 F. R. 8329, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 73.314) to read as follows:

§ 73.314 *Compressed gases in tank cars.* (a) * * *

Kind of gas	Maximum permitted filling density, Note 1	Required type of tank car, Note 2
Butadiene (pressure not exceeding 75 pounds per square inch at 105° F.), inhibited.	Note 3	ICC–105A100, 105A100–W, Note 9.
Liquid hydrocarbon gas (pressure not exceeding 75 pounds per square inch at 105° F.).	Note 6	ICC–105A100, 105A100–W, Note 9.
Liquefied petroleum gas (pressure not exceeding 75 pounds per square inch at 105° F.).	Note 3	ICC–105A100, 105A100–W, Note 9.
Vinyl methyl ether, inhibited. (See Note 14.)	68	ICC–105A100, 105A100–W, 105A300, 105A300–W.

* * * * *

NOTE 2: When tank cars marked ICC–105A300 or ICC–105A300–W (§§ 78.271 or 78.286 of this chapter) are prescribed, tank cars marked ICC–105A400, 105A400–W, 105A500, 105A500–W, 105A600, and 105A600–W (§§ 78.272, 78.287, 78.273, 78.288, 78.274 and 78.289 of this chapter) may also be used. When ICC–105A100 or ICC–105A100–W (§§ 78.270 or 78.285 of this chapter) tank cars are prescribed, tank cars marked ICC–105A300, 105A300–W, 105A400, 105A400–W, 105A500, 105A500–W, 105A600, and 105A600–W (§§ 78.271, 78.286, 78.272, 78.287, 78.273, 78.288, 78.274, and 78.289 of this chapter), may also be used, and when ICC–106A500 and 106A–500–X (§§ 78.275 of this chapter) tank cars are prescribed, tank cars marked ICC–106A800 and 106A800X (§ 78.276 of this chapter) may also be used.

* * * * *

NOTE 9: For tank cars other than 106A (§ 78.275 or 78.276 of this chapter) type, used for the transportation of liquefied flammable gases, interior pipes of loading and unloading valves must be equipped with excess flow valves of approved design.

* * * * *

(b) The gas pressure at 105° F. in any lagged tank of tank cars of specs. 105A100, 105A100–W, 105A300, 105A300–W, 105A400, 105A400–W, 105A500, 105A500–W, 105A600, 105A600–W (§§ 78.270, 78,285, 78.271, 78.286, 78.272, 78.287, 78.273, 78.288, 78.274, and 78,289 of this chapter), and at 130° F. in any unlagged tank of tank cars of specs. 106A500, 106A500X, 106A800, 106A800X, and 110A500W (§§ 78.275, 78.276, and 78.293 of this chapter) must not exceed three-fourth times the prescribed retest pressure of the tank. The gas pressure at 130° F. in any unlagged tank of tank cars of the 107A (§ 78.277 of this chapter) series must not exceed seven-tenths of the marked test pressure of the tank.

[No change in Note 1.]

* * * * *

SUBPART G—POISONOUS ARTICLES; DEFINITION AND PREPARATION

1. Amend § 73.346 paragraph (a) (10) (19 F. R. 8528, Dec. 14, 1954) (49 CFR 1950 Rev., 1954 Supp., 73.346) to read as follows:

§ 73.346 *Poisonous liquids not specifically provided for.* (a) * * *

(10) Spec. 103, 103–W, 103A, 103A–W, 104, 104–W, 105A100, 105A100–W, 105A–300, 105A300–W, 105A400, 105A400–W, 105A500, 105A500–W, 105A600, 105A600–W (§§ 78.265, 78.280, 78.266, 78.281, 78.–269, 78.284, 78.270, 78.285, 78.271, 78.286, 78.272, 78.287, 78.273, 78.288, 78.274, 78.–289 of this chapter), or ARA–IV–A[1] Tank cars.

* * * * *

2. Amend § 73.353 paragraphs (a) (5) and (b) (17 F. R. 7282, Aug. 9, 1952) (49 CFR 1950 Rev., 1954 Supp., 73.353) to read as follows:

§ 73.353 *Methyl bromide.* (a) * * *

(5) Spec. 105A100, 105A100–W, 105A–300, 105A300–W, 105A400, 105A400–W, 105A500, 105A500–W, 105A600, 105A600–W, 106A500, 106A500X, or 106A800 (§§ 78.270, 78.285, 78.271, 78.286, 78.272, 78.287, 78.273, 78.288, 78.274, 78.289, 78.–275, or 78.276 of this chapter). Tank cars.

(b) Outage must be sufficient to prevent tank car from becoming entirely filled with liquid at the following temperature: Spec. 105A100, 105A100–W, 105A300, 105A300–W, 105A400, 105A400–W, 105A500, 105A500–W, 105A600, or 105A600–W (§§ 78.270, 78.285, 78.271, 78.286, 78.272, 78.287, 78.273, 78.288, 78.–274, or 78.289 of this chapter) at 105° F., spec. 106A500, 106A500X, or 106A800 (§§ 78.275 or 78.276 of this chapter) at 130° F.

* * * * *

PART 78—SHIPPING CONTAINER SPECIFICATIONS

SUBPART I—SPECIFICATIONS FOR TANK CARS

1. Amend the Preface to Subpart I (15 F. R. 8485, Dec. 2, 1950) (49 CFR Part 78 Subpart I Preface, 1950 Rev.) to read as follows:

§ 78.256 *Preface.* (a) The following specifications for tanks are minimum requirements. Changes or modifications thereof may be made effective by further order of the Commission. See § 71.4 of this chapter reading as follows:

Changes in tank car specifications. (a) Proposals of changes in or additions to specifications for tanks to be mounted on or to form part of a car and to be classified as tank cars should be submitted to the Secretary, Mechanical Division, Association of American Railroads, for thorough investigation and consideration by its Committee on Tank Cars, that Committee to report its recommendations, together with objections offered to its proposals, with explanations and reasons for desired approval thereof, through said Secretary to the Commission, and such reports may be submitted to the Bureau of Explosives, as circumstances appear to warrant, for comments and suggestions before appropriate action by the Commission.

(b) Wherever the word "approved" is used in this subpart, it refers to procedure covered in § 71.5 of this chapter reading as follows:

Procedure covering tank car construction. (a) Complete detailed prints of new or improved types of tank car tanks and detailed prints or samples of new or improved types of equipment therefore should be submitted to the Secretary, Mechanical Division, Association of American Railroads, for thorough investigation and laboratory tests of samples by its Committee on Tank Cars.

(b) When in the opinion of the Committee such tanks or equipment therefore are in full compliance with effective specifications of the Commission and no increase in hazard is involved, their use should be permitted.

(c) When in the opinion of the Committee such tanks or equipment therefore are in full compliance with effective specifications of the Commission and a possible increase in hazard is involved, service trials should be agreed upon among interested parties before more extended use is permitted.

(d) When in the opinion of the Committee such tanks or equipment therefore do not comply with effective specifications of the Commission and service trials are desirable, approval by the Commission of the conditions of such trials must be obtained.

(e) Prompt reports of the Tank Car Committee on these matters should be made to the Commission through said Mechanical Division Secretary and should include objections to proposed modifications of the specifications and advice of any extensions of pending investigations found necessary. The Committee's expert opinions thus obtained will be given due weight by the Commission in determining appropriate final action to be taken. The merits of controversies arising under the foregoing procedure will be considered and changes in or additions to the specifications, or authorizations of service trials, will be made by the Commission as conditions appear to warrant.

2. Amend § 78.257 paragraph (a) (15 F. R. 8485, Dec. 2, 1950) (49 CFR 78.257, 1950 Rev.) to read as follows:

§ 78.257 *General.* (a) All tanks built on or after the effective date of Parts 71 and 78 of this chapter must comply with all applicable requirements of the specifications in this subpart, and maintained in accordance with § 73.31 of this chapter.

3. Amend entire § 78.258 (15 F. R. 8485, Dec. 2, 1950) (49 CFR 78.258, 1950 Rev.) to read as follows:

§ 78.258 *Specification changes.* (a) Specifications previously published are not applicable for cars and tanks mounted thereon built on or after _____. Specifications contained herein are for new cars, or tanks therefore, built on or after _____.

4. Amend entire § 78.259 (17 F. R. 9840, Nov. 1, 1952) (17 F. R. 4298, May 10, 1952) (15 F. R. 8485, 8486, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.259) to read as follows:

§ 78.259 *Applications for approval.* (a) Applications for approval of new or modified designs, specifications or materials for tanks and equipment therefore shall be submitted to the Secretary, Mechanical Division, Association of American Railroads for appropriate committee action.

(b) Applications for approval of designs to be used in constructing cars under these specifications, shall be submitted to said Secretary.

(c) To propose a new specification for tank cars, an applicant should furnish information to show the necessity to justify a new classification. This data should give:

(1) The method of handling the loading and unloading of the lading.

(2) The nature and properties of the lading.

(3) The reason why any existing classification cannot be used.

(d) An application for construction of cars to any new classification, and the proposed specification covering same, may be filed with the Secretary, Mechanical Division, Association of American Railroads; but construction shall be held in abeyance until after the specification has been approved. The Subcommittee on Specifications of the Committee on Tank Cars shall complete a review of the proposed specification at its earliest convenience and report its recommendations to the Committee on Tank Cars for prompt consideration. Construction or repairs not in accord with currently effective regulations is cause for rejection of an application, therefore the Committee on Tank Cars should not be asked to approve an application on any other basis other than currently effective regulations. This procedure is not intended to discourage new design within the scope of currently effective regulations; but to prevent premature construction in anticipation of the adoption of a new tank car classification.

5. Amend entire § 78.260 (15 F. R. 8486, Dec. 2, 1950) (49 CFR 78.260, 1950 Rev.) to read as follows:

§ 78.260 *Tank car heater systems; approval of designs.* (a) Application for approval of designs of heater systems for installation in new or existing tanks shall be submitted to said Secretary and approval by appropriate action obtained before cars with heater systems are placed in service.

6. Amend entire § 78.261 (15 F. R. 8486, Dec. 2, 1950) (49 CFR 78.261, 1950 Rev.) to read as follows:

§ 78.261 *Specification for interior heater systems*—(a) *Heater pipes and fittings.* (1) When threaded joints are used, pipes shall not be less than two inch "extra strong" lap-welded steel, seamless steel, electric-resistance-welded steel, or wrought iron to current A. A. R. specifications. When the joints are welded, instead of threaded, to give them the same bending strength as the body of the pipes, the thickness of wall may be reduced 20 percent. Joints shall be made by threaded wrought couplings, forged unions, bolted flanges, or welding. A minimum number of connections shall be used.

(2) Interior heater systems shall be made of material not affected by the lading. When materials specified in subparagraph (1) of this paragraph are not suitable on account of effect of lading, other approved materials shall be used.

(b) *Return bends.* Cast iron, malleable iron or cast steel return bends shall not be used. Return bends shall be forged or made by bending the pipe. Cast or forged manifolds of approved design are permissible.

(c) *Application to tank.* All piping shall be properly secured to permit necessary expansion and contraction.

(d) *Inlets and outlets.* (1) Inlets and outlets shall be so located in any portion of dome, shell or heads of tanks or steam jacketed outlet as to afford proper self-drainage of the entire system.

(2) Breakage groove required on steam jacketed outlets.

(3) When ends of steam coils are not attached to manifold or steam jacketed outlet chamber they shall be attached to pads or reinforcements. Pads or reinforcements shall be attached to tank or dome to comply with specifications for type of car involved. Outside pipe connections to steam coils shall not be integral part of the interior coils and shall be screwed or welded, or both, into outside of pads or reinforcements.

(4) Both inlets and outlets of heater pipes shall be equipped with valve cock, cap or plug. Caps and plugs shall be secured by chain.

(e) *Compartment and multiple-tank cars.* The heater system for each compartment of a compartment tank or each tank of a multiple tank car shall be treated as a separate tank and comply with the requirements contained herein.

(f) *Tests and retests.* (1) The heater system of each tank shall be tested with hydrostatic pressure and shall be tight at 200 pounds per square inch.

(2) Similar tests shall be made after renewals of any part of heater system.

(3) Each time tanks having heater systems are retested as prescribed in the specifications therefor, the heater system shall also be retested and be tight at a hydrostatic pressure of 200 pounds per square inch.

(g) *Reports.* Reports shall be made on Certificate of Construction when heater systems are installed, including report of initial test. Reports of retests

of tanks shall include retests of heater systems.

7. Cancel entire § 78.262 (15 F. R. 8486, Dec. 2, 1950) (49 CFR 78.262, 1950 Rev.)

8. Cancel entire § 78.263 (15 F. R. 8486 to 8488, Dec. 2, 1950) (49 CFR 78.263, 1950 Rev.)

9. Amend entire § 78.265 (19 F. R. 3263, June 3, 1954) (18 F. R. 3144, June 2, 1953) (17 F. R. 9840, Nov. 1, 1952) (15 F. R. 8488, 8489, 8490, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.265) to read as follows:

§ 78.265 *Specification ICC–103; riveted steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.265–1 *Type.* (a) Tanks built under this specification must be cylindrical with heads designed convex outward, and must have at least one expansion dome with manway, and such other external projections as are prescribed herein. When the interior of the tank is divided into compartments, each compartment must have 2 heads designed convex outward, one expansion dome with manway, and such other external projections as are prescribed herein.

§ 78.265–2 *Lagging.* (a) Not a specification requirement. If applied, the tank shell and expansion dome must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to exterior of tank the lagging over each heater element may be reduced in thickness.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.265–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal seam, must be at least 240 pounds per square inch.

§ 78.265–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula, but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal riveted seam.

(See § 78.265–7 (b).)

(1) The thickness of a dished head must be determined by the following formula, but in no case be less than that specified in paragraph (b) of this section:

$$t=\frac{5PL}{6SE}$$

where

t = thickness of plate in inches;
P = calculated bursting pressure pounds per square inch;
L = main inside radius to which head is dished measured on concave side in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of riveted joint.

When head is formed from one piece, the efficiency may be considered as 100 percent.

(b) The minimum thickness of plates, including thickness of each plate at rivet seams, must be as follows:

Inside diameter of tanks	Bottom sheets	Shell sheets	Expansion dome sheets	Tank heads	Expansion dome heads	Interior compartment heads
	Inch	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
60 inches or under	7/16	1/4	5/16	1/2	5/16	3/8
Over 60 to 78 inches	7/16	5/16	5/16	1/2	5/16	3/8
Over 78 to 96 inches	1/2	3/8	5/16	1/2	5/16	3/8
Over 96 to 112 inches	1/2	7/16	5/16	9/16	5/16	7/16
Over 112 to 122 inches	1/2	1/2	5/16	5/8	5/16	1/2

(c) The minimum thickness of clad plates, where cladding material has physical properties at least equal to that of the base plate prescribed in § 78.265–5 (a), must be as prescribed in the above table. Where the cladding material does not have physical properties at least equal to that of the base plate prescribed in § 78.265–5 (a), minimum thickness of base plate must be as prescribed in the above table.

(d) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal seam, including overlaps, above the cradle.

(e) For tanks built of one piece cylindrical sections, the thickness specified for bottom sheet must apply to the entire cylindrical shell.

(f) For tanks without underframe the minimum thickness of bottom sheet must not be less than 5/8 inch.

(g) When tank is divided into compartments the interior heads must comply with the requirements for interior compartment heads prescribed herein. When capacity of tank is reduced by moving in the exterior head a new exterior head of approved contour not less than 3/8 inch thickness must be applied. When the capacity is reduced by the insertion of a new interior head this head must comply with the requirements for interior compartment heads and the exterior head reapplied. Voids, created by the addition of heads for division into compartments or reduction in capacity, must be provided with a tapped drain hole at their lowest point, and a tapped hole at top of tank. The top hole must be closed, and the bottom hole may be closed, with not less than 3/4 inch nor more than 1½ inches solid pipe plugs having standard pipe threads.

§ 78.265–5 *Material.* (a) All plates for tank and expansion dome must be made of open-hearth boiler-plate flange quality steel to an approved specification. These plates may also be clad with other metals, such as nickel.

(b) All castings used for fittings or attachments to tank must be made of material to an approved specification.

(c) Rivets must be of the same quality as used for steam boilers and other pressure vessels and be made of steel to an approved specification. When clad plates are used, the rivet heads inside the tank must be clad with the same material or rivets may be of the same material as the cladding, provided rivets have physical properties at least equivalent to rivets prescribed herein.

(d) All external projections must be made of materials specified herein.

(e) Lining or interior coating is not a specification requirement. If applied, it must be approved as to material.

§ 78.265–6 *Tank heads.* (a) Tank heads must be of approved contour and must be designed for pressure on concave side and to main inside radius not exceeding 10 feet. The inside knuckle radius must not be less than 3¾ inches except for interior heads of compartment tanks the knuckle radius must not be less than 1½ inches.

(b) Tank heads may be made of two plates joined by fusion-welding in accordance with the requirements prescribed by AAR Welding Code Appendix W, except that stress-relieving is not required if heads are heated to not less than 1200 degrees Fahrenheit for pressing. The fusion welded joint for tank heads must be located horizontally.

§ 78.265–7 *Riveting.* (a) For computing rivet areas the effective diameter of a driven rivet is the diameter of its reamed hole, which hole must in no case exceed nominal diameter of rivet by more than 1/16 inch. All rivets must be driven hot.

(b) All seams formed in the manufacture of the tank and expansion dome proper and the attachment of the expansion dome to the tank must be double riveted. Dome head, manway ring, safety valve flange and bottom outlet nozzle flange may be single or double riveted. Riveted seams and joints must be made metal to metal without interposition of other material, with the exception that the use of 2 liners not to exceed 1 inch in width and 1/8 inch in thickness, placed at an angle across the longitudinal seams between 2 rows of rivets near the internal tank heads on compartment cars to prevent the liquid from passing along the longitudinal seams from one compartment to another while cars are being water tested, will be permissible. The efficiency of double-riveted seams must be at least 70 per cent of the strength of the thinnest plate specified in § 78.265–4 (a) (1), (b) and (c). The efficiency of single riveted seams must be at least 45 per cent of the strength of the thinnest plate specified in § 78.265–4 (a) (1), (b) and (c). Use of rivets of less than 5/8-inch nominal diameter not permissible on any part of tank or attachments.

§ 78.265–8 *Calking.* (a) All seams, including those formed by attachment of expansion dome and other external projections, must be calked both inside and outside, except that inside calking of the seam formed by attachment of expansion dome to tank when tank sheet is not cut out to full diameter of the dome, is not required and outside calking of seams formed by attachment of all external projections, except the expansion dome, is not required. Split calking is prohibited.

(b) The edges of plates at all riveted seams must be beveled so that the angle of the calking edges will be between 60 and 70 degrees with the flat surface of the plate. The extreme calking edge distance, measured from center line of rivet hole, must be at least 1½ times the diameter of the hole and not more than that distance plus ¼ inch.

(c) Electric seal welding of inside calking edges only, in whole or in part, using shielded arc type of electrode, is permitted on new or existing equipment, provided the weld bead has a ⅛ inch minimum to 3/16 inch maximum throat thickness. Qualification of welders must comply with requirements prescribed by AAR Welding Code Appendix W. Welding clad material to edge of clad plates inside of tank is permitted. Other methods of covering edges of clad plates, if approved, may be used.

§ 78.265–9 *Tank mounting.* (a) The manner in which tank is supported on and securely attached to the car structure must be approved.

§ 78.265–10 *Expansion dome.* (a) The expansion dome must have a capacity, measured from the inside top of shell of tank to the inside top of dome or bottom of any vent pipe projecting inside dome of at least 2 percent of the total capacity of the tank and dome combined, except that when safety valve or safety vent is applied to side of dome, the effective capacity of dome must be measured from top of safety valve or safety vent opening in the side of dome to inside top of shell of tank.

(b) The opening in manway ring must be at least 16 inches in diameter. The opening in the tank shell within the dome must be at least 29 inches in diameter. When the opening in the tank shell exceeds 30 inches in diameter, the opening must be reinforced in an approved manner. When the opening in the tank shell is less than the inside diameter of the dome, and the dome pocket is not closed off in an approved manner. Dome pocket drain holes must be provided in the tank shell with nipples projecting inside the tank at least 1 inch.

(c) The dome head must be of approved contour and must be designed for pressure on concave side.

(d) The entire dome assembly, dome head assembly, or dome header assembly, including the nozzles and flanges, as required, may be built up by fusion welding, providing this detail is fabricated and stress-relieved in accordance with the requirements prescribed by AAR Welding Code Appendix W.

§ 78.265–11 *Closures for manway.* (a) The manway cover must be of approved type and designed to make it impossible to remove the cover while the interior of the tank is subjected to pressure.

(b) Manway rings and covers must be of cast, forged or fabricated steel, malleable iron or other malleable metals.

(c) All covers not hinged must be attached to outside of the dome head by at least ⅜ inch chain or its equivalent.

(d) All joints between manway covers and their seats must be made tight against leakage of vapor and liquid by use of gaskets of suitable material.

§ 78.265–12 *Gauging, bottom outlet valve operating rod, venting, loading and unloading, and air inlet devices extending through domes of tanks.* (a) Not specification requirements. When installed, these devices including their valves or fittings must be of approved design and made of materials not subject to rapid deterioration by the lading. These devices including their valves or fittings must be provided with a protective housing. Unloading pipes must be securely anchored within the tank. Provision must be made for closing pipe connections of valves.

§ 78.265–13 *Bottom outlets.* (a) The bottom outlet, when installed, must be made of metal not subject to rapid deterioration by the lading, be of approved construction and be provided with a valve at its upper end and a liquid-tight closure at its lower end.

(b) The valve operating mechanism and outlet nozzle construction must be such as to insure against unseating of valve due to stresses or shocks incident to transportation.

(c) Bottom outlet nozzle may be of cast, fabricated or forged metal.

(d) To provide for the attachment of standard unloading connections, the bottom of the main portion of the outlet nozzle or some fixed attachment thereto, must have external Unified Form Threads, 4 threads to the inch.

(e) For outlet nozzles that project 6 inches or more from the shell of tank a "V" groove must be cut (not cast) in the upper part of outlet nozzle at a point immediately below lowest part of valve to a depth that will leave thickness of nozzle wall at the root of the "V" not over ⅜ inch. In the case of steam jacketed outlet nozzles this groove must be below the steam chamber but above the bottom of center sill construction. Where outlet nozzle is not a single piece, arrangement must be made to provide the equivalent of the breakage groove.

(f) The flange on the outlet nozzle must be of a thickness which will prevent distortion of the valve seat or valve by any change in contour of the shell resulting from expansion of lading, or other causes, and which will insure that accidental breakage of the outlet nozzle will occur at or below the "V" groove.

(g) The valve must have no wings or stem projecting below the "V" groove in the outlet nozzle. The valve seat must be readily accessible or removable for repairs, including grinding.

(h) The valve operating mechanism must have means for compensating for variation in the vertical diameter of the tank produced by expansion, weight of the liquid contents, or other causes, and should operate from the interior of the tank, but in the event the rod is carried through the dome, leakage must be prevented by packing in stuffing box and cap nut.

(i) In no case must extreme projection of bottom outlet equipment extend to within 12 inches above top of rail. All bottom outlet reducers and closures and their attachments must be secured to car by at least ⅜ inch chain or its equivalent, except that outlet closure plugs may be attached by ¼ inch chain. When the bottom outlet closure is of the combination cap and valve type, the pipe connection to the valve must be closed by a plug or cap.

§ 78.265–14 *Safety valves.* (a) The tank must be equipped with one or more safety valves of approved design mounted on expansion dome. Total valve discharge capacity must be sufficient to prevent building up of pressure in the tank in excess of 45 pounds per square inch.

(b) One safety valve must be provided for each tank or compartment thereof, of 6,650 gallons capacity or less, and 2 safety valves for each tank or compartment thereof, of over 6,650 gallons capacity.

(c) Each safety valve must be set to open at a pressure of 35 pounds per square inch and be vapor tight at 28 pounds per square inch. (For tolerance see § 78.265–19.)

(d) Tanks used for the transportation of corrosive liquids, flammable solids, oxidizing materials, or poisonous liquids or solids, class B, need not be equipped with safety valves, but if not so equipped must have one safety vent at least 1¾ inches inside diameter closed with a frangible disc of lead or other suitable material of a thickness that will rupture at not more than 45 pounds per square inch. Means for holding disc in place must be such as to prevent distortion or damage to disc when applied. Safety vent closure must be chained or otherwise fastened to prevent misplacement. All tanks equipped with vents must be stenciled "Not for Flammable Liquids".

§ 78.265–15 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) All attachments to tank and dome must be riveted in place and calked to comply with conditions prescribed in §§ 78.265–7 and 78.265–8, or applied by other approved means of at least equal strength and efficiency. Interior heater systems, when installed, must be so constructed that the breaking off of their external connections will not cause leakage of contents of tank.

§ 78.265–16 *Interior heater systems.* (a) See §§ 78.260 and 78.261, heater systems.

§ 78.265–17 *Closures for openings.* (a) All plugs must be solid of good grade cast iron or equivalent with standard pipe thread of a length which will screw at least 6 threads inside the face of fitting or tank. Plugs when inserted from the outside of tank must have the letter "S" at least ⅜ inch in size stamped with steel

stamp or cast on the outside surface to indicate the plug is solid.

§ 78.265–18 *Tests of tanks.* (a) Each tank must be tested, before being put into service, by completely filling tank and dome with water, or other liquid having similar viscosity, of a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 60 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All rivets and closures, except safety valves or safety vents, must be in place while test is made.

(b) If tanks are to be lagged, the test of tank must be made before lagging is applied.

(c) Before interior heater systems are placed in service they must be tested with hydrostatic pressure and must be tight at 200 pounds per square inch.

§ 78.265–19 *Tests of safety valves.* (a) Each valve must be tested, before being put into service, by attaching to an air line and applying pressure. The valve must not leak below 28 pounds pressure. The valve must open at the pressure prescribed in § 78.265–14 (c), with a tolerance of plus or minus 3 pounds.

§ 78.265–20 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–103 in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. This mark must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped mark specified in subparagraph (1) of this paragraph.

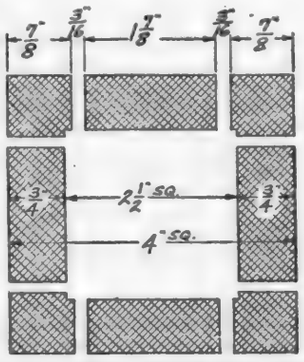
(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the builder does not complete the fabrication of the tank, such as application of riveted anchors, etc., in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph by the party assembling the completed car. These marks must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(6) Date on which heater systems were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(7) Identification mark, illustrated herein, for approved manway closure must be stenciled on each side of dome, or jacket if lagged, in line with the ladders and in a color contrasting to color of dome.



Manhole Closure Identification Mark
(Reduced size)

(8) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity, followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the tank, or jacket if lagged, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

(9) Tanks made of clad plates must be stenciled on the tank, or jacket if lagged, "(naming material) ------ clad tank". Lined tanks must be stenciled on the tank, or jacket if lagged, "(naming material) ------ lined tanks". These marks must be in letters at least 2 inches high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.265–21 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of alterations of or additions to tanks or equipment from original design and construction, there must be furnished to the same parties a report in detail of the alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

10. Amend entire § 78.266 (19 F. R. 3263, June 3, 1954) (18 F. R. 3144, June 2, 1953) (15 F. R. 8490, 8491, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.266) to read as follows:

§ 78.266 *Specification ICC–103A; riveted steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.266–1 *Type.* (a) Tanks built under this specification must be cylindrical with heads designed convex outward and must have at least one expansion dome with manway, and such other external projections as are prescribed herein. When the interior of the tank is divided into compartments, each compartment must have 2 heads designed convex outward, one expansion dome with manway, and such other external projections as are prescribed herein.

§ 78.266–2 *Lagging.* (a) Not a specification requirement. If applied, the tank shell and expansion dome must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to the exterior of tank, the lagging over each heater element may be reduced in thickness.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.266–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal seam, must be at least 240 pounds per square inch.

§ 78.266–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula, but in no case shall the wall thickness be less than that specified in paragraph (b) of this section.

$$t = \frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal riveted seam.

(See § 78.266–7 (b).)

(1) The thickness of a dished head must be determined by the following formula, but in no case be less than that specified in paragraph (b) of this section.

$$t = \frac{5PL}{6SE}$$

where

t = thickness of plate in inches;
P = calculated bursting pressure pounds per square inch;
L = main inside radius to which head is dished measured on concave side in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of riveted joint.

When head is formed from one piece, the efficiency may be considered as 100 percent.

(b) The minimum thickness of plates, including thickness of each plate at rivet seams, must be as follows:

Inside diameter of tanks	Bottom sheets	Shell sheets	Expansion dome sheets	Tank heads	Expansion dome heads	Interior compartment heads
	Inch	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
60 inches or under	7/16	1/4	5/16	1/2	5/16	3/8
Over 60 to 78 inches	7/16	5/16	5/16	1/2	5/16	3/8
Over 78 to 96 inches	1/2	3/8	5/16	1/2	5/16	3/8
Over 96 to 112 inches	1/2	7/16	5/16	9/16	5/16	7/16
Over 112 to 122 inches	1/2	1/2	5/16	5/8	5/16	1/2

(c) The minimum thickness of clad plates, where cladding material has physical properties at least equal to that of the base plate prescribed in § 78.266–5 (a), must be as prescribed in the above table. Where the cladding material does not have physical properties at least equal to that of the base plate described in § 78.266–5 (a), minimum thickness of base plate must be as prescribed in the above table.

(d) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal seam, including overlaps, above the cradle.

(e) For tanks built of one piece cylindrical sections, the thickness specified for bottom sheet must apply to the entire cylindrical shell.

(f) When tank is divided into compartments the interior heads must comply with the requirements for interior compartment heads prescribed herein. When capacity of tank is reduced by moving in the exterior head a new exterior head of approved contour not less than 3/8 inch thickness must be applied. When the capacity is reduced by the insertion of a new interior head, this head must comply with the requirements for interior compartment heads and the exterior head reapplied. Voids, created by the addition of heads for division into compartments or reduction in capacity, must be provided with a tapped drain hole at their lowest point, and a tapped hole at top of tank. The top hole must be closed, and the bottom hole may be closed, with not less than 3/4 inch nor more than 1 1/2 inches solid pipe plugs having standard pipe threads.

§ 78.266–5 *Material.* (a) All plates for tank and expansion dome must be made of open-hearth boiler-plate flange quality steel to an approved specification. These plates may also be clad with other metals, such as nickel.

(b) All castings used for fittings or attachments to tank must be made of material to an approved specification.

(c) Rivets must be of the same quality as used for steam boilers and other pressure vessels, and be made of steel to an approved specification. When clad plates are used, the rivet heads inside the tank must be clad with the same material or rivets may be of the same material as the cladding provided rivets have physical properties at least equivalent to rivets prescribed herein.

(d) All external projections must be made of materials specified herein.

(e) Lining or interior coating is not a specification requirement. If applied, it must be approved as to material.

§ 78.266–6 *Tank heads.* (a) Tank heads must be of approved contour and must be designed for pressure on concave side and to main inside radius not exceeding 10 feet. The inside knuckle radius must not be less than 3 3/4 inches except for interior heads of compartment tanks the knuckle radius must not be less than 1 1/2 inches.

(b) Tank heads may be made of two plates joined by fusion welding in accordance with the requirements prescribed by AAR Welding Code Appendix W, except that stress-relieving is not required if heads are heated to not less than 1,200 degrees Fahrenheit, for pressing. Fusion-welded joint for tank heads must be located horizontally.

§ 78.266–7 *Riveting.* (a) For computing rivet areas the effective diameter of a driven rivet is the diameter of its reamed hole, which hole must in no case exceed nominal diameter of rivet by more than 1/16 inch. All rivets must be driven hot.

(b) All seams formed in the manufacture of the tank and expansion dome proper and the attachment of the expansion dome to the tank must be double riveted. Dome head, manway ring, safety vent flange and bottom washout nozzle flange may be single or double riveted. Riveted seams and joints must be made metal to metal without interposition of other material with the exception that the use of two liners not to exceed one inch in width and 1/16 inch in thickness, placed at an angle across the longitudinal seams between two rows of rivets near the internal tank heads on compartment cars to prevent the liquid from passing along the longitudinal seams from one compartment to another while cars are being water tested, will be permissible. The efficiency of double riveted seams must be at least 70 per cent of the thinnest plate specified in § 78.266–4 (a) (1), (b) and (c). The efficiency of single riveted seams must be at least 45 per cent of the strength of the thinnest plate specified in § 78.266–4 (a) (1), (b) and (c). Use of rivets less than 5/8 inch nominal diameter not permissible on any part of tank or attachments.

§ 78.266–8 *Calking.* (a) All seams, including those formed by attachment of expansion dome and other external projections, must be calked both inside and outside, except that inside calking of the seams formed by attachment of expansion dome to tank, when tank sheet is not cut out to full diameter of dome, is not required and outside calking of seams formed by attachment of all external projections, except the expansion dome, is not required. Split calking is prohibited.

(b) The edges of plates at all riveted seams must be beveled so that the angle of the calking edges will be between 60 and 70 degrees with the flat surface of the plate. The extreme calking edge distance, measured from center line of rivet hole, must be at least 1 1/2 times the diameter of the hole and not more than that distance plus 1/4 inch.

(c) Electric seal welding of inside calking edges only, in whole or in part, using shielded arc type of electrode, is permitted on new or existing equipment, provided the weld bead has a 1/8 inch minimum to 3/16 inch maximum throat thickness. Qualification of welders must comply with requirements of AAR Welding Code Appendix W. Welding clad material to edge of clad plates inside of tank is permitted. Other methods of covering edges of clad plates, if approved, may be used.

§ 78.266–9 *Tank mounting.* (a) The manner in which the tank is supported on and securely attached to the car structure must be approved.

§ 78.266–10 *Expansion dome.* (a) The expansion dome must have a capacity, measured from the inside top of dome or bottom of any vent pipe projecting inside dome, of at least 1 percent of the total capacity of the tank and dome combined, except that when safety vent applied to side of dome, the effective capacity of dome must be measured from top of safety vent opening in the side of dome to inside top of shell of tank.

(b) The opening in manway ring must be 16 inches in diameter. The opening in the tank shell within the dome must be at least 29 inches in diameter. When the opening in the tank shell exceeds 30 inches in diameter the opening must be reinforced in an approved manner. When the opening in the tank shell is less than the inside diameter of the dome, and the dome pocket is not closed off in an approved manner, dome pocket drain holes must be provided with nipples extending inside the tank at least 1 inch and the joint between the base of the dome and the tank shell must be sealed on the inside in an approved manner.

(c) The dome head must be of approved contour and must be designed for pressure on concave side.

(d) The entire dome assembly, dome head assembly, or dome header assembly, including the nozzles and flanges, as required, may be built up by fusion-welding providing this detail is fabricated and stress-relieved in accordance with the requirements prescribed in AAR Welding Code Appendix W.

§ 78.266–11 *Closures for manways.* (a) The manway cover must be bolted type, bolted and hinged type or other approved types and designed to provide a secure closure of the manway.

(b) Manway rings and covers must be of cast, forged or fabricated steel, malleable iron or other malleable metals.

(c) Chains, if used to attach manway cover to outside of dome head, must be at least 3/8 inch or its equivalent.

(d) All joints between covers and their seats must be made tight against leakage of vapor and liquid by use of gaskets of suitable material.

§ 78.266–12 *Gauging, venting, loading and unloading, and air inlet devices extending through dome of tank.* (a) Not specification requirements. When in-

stalled these devices must be of approved design made of material not subject to rapid deterioration by the lading and be tightly closed. Protective housing not required except as prescribed in paragraph (b) of this section. Unloading pipes must be securely anchored within the tank.

(b) When the characteristics of the commodity for which the car is authorized are such that these devices must be equipped with valves to provide for the loading and unloading of the contents, these devices, including valves, must be of an approved design, and be provided with a protective housing. Provision must be made for closing pipe connections of the valves.

§ 78.266–13 *Bottom outlets.* (a) Bottom outlet is prohibited, but tank may be equipped with a bottom washout nozzle of metal not subject to rapid deterioration by the lading, which must be of approved construction complying with the following requirements:

(b) The construction and closure of the bottom washout nozzle must be such that it is liquid tight and should the nozzle be broken, loss of contents of the tank will not occur.

(c) The extreme projection of the bottom washout nozzle must be at least 12 inches above the top of rail.

(d) Bottom washout may be of cast, fabricated, or forged metal.

(e) The closure of the washout nozzle must be equipped with a ¾ inch solid screw plug. Plug must be secured to car structure or washout chamber by at least a ¼ inch chain.

(f) For bottom washout nozzles that project 6 inches or more from shell of tank a "V" groove must be cut (not cast) in the upper part of bottom washout nozzle at a point immediately below lowest part of inside closure seat to a depth that will leave thickness of nozzle wall at the root of the "V" not over ⅜ inch. Where bottom washout nozzle is not a single piece, arrangement must be made to provide the equivalent of the breakage groove.

(g) The flange on the bottom washout nozzle must be of a thickness which will prevent distortion of the inside closure seat or closure casting by any change in contour of the shell, resulting from expansion of lading, or other causes, and which will insure that accidental breakage of the washout nozzle will occur at or below the "V" groove.

(h) The closure casting must not project below the "V" groove in the washout nozzle. The closure casting and seat must be readily accessible for repairs, including grinding.

§ 78.266–14 *Safety vents.* (a) Safety valves are prohibited, but a safety vent must be applied.

(b) Each tank or compartment thereof must be equipped with one safety vent at least 1¾ inches inside diameter closed with a frangible disc of lead or other suitable material that will rupture at not more than 45 pounds per square inch. Means for holding disc in place must be such as to prevent distortion or damage to disc when applied. Safety vent closure must be chained or otherwise fastened to prevent misplacement.

§ 78.266–15 *Fixtures, reinforcements and attachments not otherwise specified.* (a) All attachments to tank and dome must be riveted in place and calked to comply with conditions prescribed in §§ 78.266–7 and 78.266–8 or applied by other approved means of at least equal strength and efficiency. Interior heater systems, when installed, must be so constructed that the breaking off of their external connections will not cause leakage of contents of tank.

§ 78.266–16 *Interior heater systems.* (a) See §§ 78.260 and 78.261, heater systems.

§ 78.266–17 *Closures for openings.* (a) All plugs must be solid of good grade cast iron or equivalent with standard pipe thread, of a length which will screw at least 6 threads inside the face of fitting or tank. Plugs when inserted from the outside of tank heads must have the letter "S" at least ⅜ inch in size stamped with steel stamp or cast on the outside surface to indicate the plug is solid.

§ 78.266–18 *Tests of tanks.* (a) Each tank must be tested, before being put into service, by completely filling tank and dome with water, or other liquid having similar viscosity, of a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 60 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All rivets and closures, except safety vents, must be in place while test is made.

(b) If tanks are to be lagged, the test of tank must be made before lagging is applied.

(c) Test of interior heater systems. Before interior heater systems are placed in service they must be tested with hydrostatic pressure and must be tight at 200 pounds per square inch.

§ 78.266–19 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–103A in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank. This mark must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped mark specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, such as application of riveted anchors, etc., in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph by the party assembling the completed car. These marks must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(5) Date on which interior heater systems were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(6) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only" or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the tank, or jacket if lagged, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

(7) Tanks made of clad plates must be stenciled on the tank, or jacket if lagged, "(naming material) _____ clad tank". Lined tanks must be stenciled on the tank, or jacket if lagged, "(naming material) _____ lined tank". These marks must be in letters at least 2 inches high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.266–20 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of alterations of or additions to tanks or equipment from original design and construction, there must be furnished to the same parties a report in detail of the alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Report of retests must be rendered to the Bureau of Explosives and car owner.

11. Amend entire § 78.267 (19 F. R. 3263, June 3, 1954) (18 F. R. 3144, June 2, 1953) (15 F. R. 8491, 8492, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.267) to read as follows:

§ 78.267 *Specification ICC–103B; rubber lined riveted steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.267–1 *Type.* (a) Tanks built under this specification must be cylindrical with heads designed convex outward, and must have at least one expansion dome with manway and such other external projections as are prescribed herein. When the interior of the tank is divided into compartments, each compartment must have two heads designed convex outward, one expansion dome with manway, and such other external projections as are prescribed herein.

§ 78.267–2 *Lagging.* (a) Not a specification requirement. If applied, the

tank shell and expansion dome must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to the exterior of the tank, the lagging over each heater element may be reduced in thickness.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.267–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal seam, must be at least 240 pounds per square inch.

§ 78.267–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula, but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t=\frac{Pd}{2SE}$$

where
- t = thickness in inches of thinnest plate;
- P = calculated bursting pressure pounds per square inch;
- d = inside diameter in inches;
- S = minimum ultimate tensile strength in pounds per square inch;
- E = efficiency of longitudinal riveted seam.

(See § 78.267–7 (b).)

(1) The thickness of a dished head must be determined by the following formula, but in no case be less than that specified in paragraph (b) of this section.

$$t=\frac{5PL}{6SE}$$

where
- t = thickness of plate in inches;
- P = calculated bursting pressure pounds per square inch;
- L = main inside radius to which head is dished measured on concave side in inches;
- S = minimum ultimate tensile strength in pounds per square inch;
- E = efficiency of riveted joint.

When head is formed from one piece, the efficiency may be considered as 100 percent.

(b) The minimum thickness of plates, including thickness of each plate at rivet seams, must be as follows:

Inside diameter of tanks	Bottom sheets	Shell sheets	Expansion dome sheets	Tank heads	Expansion dome heads	Interior compartment heads
	Inch	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
60 inches or under	7/16	¼	5/16	½	5/16	3/8
Over 60 to 78 inches	7/16	5/16	5/16	½	5/16	3/8
Over 78 to 96 inches	½	3/8	5/16	½	5/16	3/8
Over 96 to 112 inches	½	7/16	5/16	9/16	5/16	7/16
Over 112 to 122 inches	½	½	5/16	9/16	9/16	½

(c) Tanks must be lined with rubber at least 5/32 inch thick, except that over all rivets and tank seams the lining must be double thickness. The lining must overlap at least 1½ inches at all edges, which must be straight and be beveled to an angle of approximately 45 degrees. A rubber reinforcement pad at least 4½ feet square and at least ½ inch thick must be applied by vulcanizing to the lining on bottom of tank directly under the dome. The edges of pad must be beveled to an angle of approximately 45 degrees. An opening in this pad for sump is permitted. No rubber shall be under tension when applied except that due to conformation over rivet heads. Interior of tank must be free from scale, oxidation, moisture, and all foreign matter during the lining operation.

(d) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal seam, including overlaps, above the cradle.

(e) For tanks built for one piece cylindrical sections, the thickness specified for bottom sheet must apply to the entire cylindrical shell.

(f) When tank is divided into compartments the interior heads must comply with the requirements for interior compartment heads prescribed herein. When the capacity of tank is reduced by moving in the exterior head a new exterior head of approved contour not less than ⅜ inch in thickness must be applied. When the capacity is reduced by the insertion of a new interior head this head must comply with the requirements for interior compartment heads and the exterior head reapplied. Voids, created by the addition of heads for division into compartments or reduction in capacity, must be provided with a tapped drain hole at their lowest point, and a tapped drain hole at top of tank. The top hole must be closed, and the bottom hole may be closed, with not less than ¾ inch nor more than 1½ inch solid pipe plug having standard pipe threads.

§ 78.267–5 *Material.* (a) All plates for tank and expansion dome must be made of open-hearth boiler-plate flange quality steel to an approved specification.

(b) All castings used for fittings or attachments to tank must be made of material to an approved specification.

(c) Rivets must be of the same quality as used for steam boilers and other pressure vessels and be made of steel to an approved specification.

(d) Each tank or each compartment thereof, must be lined with an acid-resisting rubber, vulcanized or bonded directly or otherwise attached to the metal tank, to provide a non-porous laminated lining.

(e) All external projections must be made of materials specified herein.

§ 78.267–6 *Tank heads.* (a) Tanks must be of approved contour and must be designed for pressure on concave side and to main inside radius not exceeding 10 feet. The inside knuckle radius must not be less than 3¾ inches except for interior heads of compartment tanks the knuckle radius must not be less than 1½ inches.

(b) Tank heads may be made of two plates joined by fusion-welding in accordance with the requirements prescribed by AAR Welding Code Appendix W, except that stress-relieving is not required if heads are heated to not less than 1200 degrees Fahrenheit for pressing. The fusion welded joint for tank heads must be located horizontally.

§ 78.267–7 *Riveting.* (a) For computing rivet areas the effective diameter of a driven rivet is the diameter of its reamed hole, which hole must in no case exceed nominal diameter of rivet by more than 1/16 inch. All rivets must be driven hot.

(b) All seams formed in the manufacture of the tank and expansion dome proper and the attachment of the expansion dome to the tank must be double riveted. Dome head, manway ring, safety vent flange and sump flange may be single or double riveted. Riveted seams and joints must be made metal to metal without interposition of other material with the exception that the use of two liners not to exceed 1 inch in width and 1/16 inch in thickness, placed at an angle across the longitudinal seams between two rows of rivets near the internal tank heads on compartment cars to prevent the liquid from passing along the longitudinal seams from one compartment to another while car is being water tested, will be permissible. The efficiency of double riveted seams must be at least 70 percent of the strength of the thinnest plate specified in § 78.267–4 (a) (1) and (b). The efficiency of single riveted seams must be at least 45 percent of the thinnest plate specified in § 78.267–4 (a) (1) and (b). Use of rivets less than ⅝ inch nominal diameter not permitted on any part of tank or attachments. All rivet heads on the inside of tank must be of uniform size, button head or similar shape, and the under surface of the heads must be driven tight against shell.

§ 78.267–8 *Calking.* (a) All seams, including those formed by attachment of expansion dome and other external projections, must be calked both inside and outside, except that inside calking of the seam formed by attachment of expansion dome to tank, when tank sheet is not cut out to full diameter of dome, is not required and outside calking of seams formed by attachment of all external projections, except the expansion dome, is not required. When the opening in tank shell is cut out to full diameter of dome, inside calking of seam formed by attachment of expansion dome to tank is required. All projecting edges of plates, castings, and rivet heads on inside of tank must be rounded and free from fins and other irregular projections. Castings must be free from porosity. Split calking is prohibited.

(b) The edges of plates at all riveted seams must be beveled so that the angle of the calking edges will be between 60 and 70 degrees with the flat surface of the plate. The extreme calking edge distance, measured from center line of rivet hole, must be at least 1½ times the diameter of the hole and not more than that distance plus ¼ inch.

§ 78.267–9 *Tank mounting.* (a) The manner in which tank is supported on and securely attached to the car structure must be approved.

§ 78.267–10 *Expansion dome.* (a) The expansion dome must have a capacity, measured from the inside top of shell of tank to the inside top of dome or bottom of any vent pipe projecting inside dome, of at least 1 per cent of the total capacity of the tank and dome combined, except that when safety vent is applied to side of dome, the effective capacity of dome must be measured from top of safety vent opening in the side of dome to inside top of shell of tank.

(b) The opening for manway, before lining, must be at least 18 inches in diameter. The opening in the tank shell within the dome must be at least 29 inches in diameter. When the opening in the tank shell exceeds 30 inches in diameter, the opening must be reinforced in an approved manner. When the opening in the tank shell is less than the inside diameter of the dome, and the dome pocket is not closed off in an approved manner, dome pocket drain holes must be provided in the tank shell with nipples projecting inside the tank at least 1 inch.

(c) The dome head must be of approved contour and designed for pressure on concave side.

(d) The entire dome assembly, dome head assembly, including the nozzle and flanges, as required, may be built up by fusion-welding, provided this detail is fabricated and stress-relieved in accordance with the requirements prescribed by A. A. R. Welding Code Appendix "W".

§ 78.267–11 *Closures for manway.* (a) The manway cover must be of approved type, and designed to provide a secure closure of the manway.

(b) Manway cover must be made of a suitable metal. The top, bottom and edge of manway cover must be rubber covered as prescribed in § 78.267–4 (c) and § 78.267–5 (d). Through bolt holes must be lined with rubber at least ⅛ inch in thickness. Cover made of metal not affected by the lading need not be rubber covered. All rubber surfaces on outside of tank or fittings must be protected with an age resisting coating. Manway flanges must be of cast, forged or fabricated steel, malleable iron or other malleable metals.

(c) Chains, if used to attach manway cover to outside of the dome head, must be at least ⅜ inch or its equivalent.

(d) All joints between manway cover and manway flange and between manway cover and any appurtenances mounted thereon, must be made tight against leakage.

§ 78.267–12 *Gauging, venting, loading and unloading, and air inlet devices extending through dome of tanks.* (a) When installed, these devices must be of an approved design and must be tightly closed. Protective housing not required, except when the characteristics of the commodity for which the car is authorized are such that these devices must be equipped with valves to provide for the loading and unloading of the contents. These devices including the valves must be of an approved design and be provided with a protective housing. Unloading pipes must be securely anchored within the tank.

(b) When gauging, venting, loading and unloading and air inlet devices and their closures are made of material affected by the lading they must have all surfaces rubber covered as prescribed in §§ 78.267–4 (c) and 78.267–5 (d). Interior pipes of these devices must be supported at their lower end.

§ 78.267–13 *Bottom outlets.* (a) Bottom outlet is prohibited. Bottom sump is permissible. If used it must be of cast, fabricated or forged metal.

§ 78.267–14 *Safety vents.* (a) Safety valves are prohibited, but a safety vent must be applied.

(b) Each tank, or compartment thereof, must be equipped with one safety vent, lined with rubber at least ⅛ inch in thickness, having an inside diameter of at least 1¾ inches after lining, closed with a frangible disc of lead or other suitable material of a thickness that will rupture at not more than 45 pounds per square inch. Means for holding disc in place must be such as to prevent distortion or damage to disc when applied. Safety vent closure must be chained or otherwise fastened to prevent misplacement.

§ 78.267–15 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) All attachments to tank and dome must be riveted in place and calked to comply with conditions prescribed in §§ 78.267–7 and 78.267–8, or applied by other approved means of at least equal strength and efficiency. Interior heater systems, when installed, must be made of material not affected by the lading. They must be constructed so that the breaking off of their external connections will not cause leakage of contents of tank. All surfaces or attachments exposed to the lading must be rubber covered as prescribed in § 78.267–4 (c) and § 78.267–5 (d). Attachments made of metal not affected by the lading need not be rubber covered.

§ 78.267–16 *Interior heater systems.* (a) See §§ 78.260 and 78.261, heater systems.

§ 78.267–17 *Closures for openings.* (a) Closures for all openings must have all surfaces exposed to the lading rubber covered or be made of metal not affected by the lading.

§ 78.267–18 *Tests of tanks.* (a) Each tank must be tested, before rubber lining is applied, by completely filling tank and dome with water, or other liquid having similar viscosity, of a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 60 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All rivets and closures, except safety vents, must be in place while test is made. After tank is rubber lined, no further tests are required. If tanks are to be lagged, the test of tank must be made before lagging is applied.

(b) Before interior heater systems are placed in service they must be tested with hydrostatic pressure and must be tight at 200 pounds per square inch.

§ 78.267–19 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–103B in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. This mark must also be stenciled on the tank or jacket if lagged, in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped mark specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, such as application of riveted anchors, etc., in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph by the party assembling the completed car. These marks must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) "Rubber-lined tank—pressure test not required", stenciled on tank, or jacket if lagged, instead of record of test of tank.

(5) Date on which interior heater systems were last tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(6) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity, followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the tank, or jacket if lagged, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.267–20 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to the car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of alterations of or additions to tanks and equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the alterations or additions made to each tank covered by a particular application, showing the initials and numbers of each tank involved. Reports of retests must be

rendered to the Bureau of Explosives and car owner.

(b) Before a tank car tank not originally built under this specification is lined with rubber, a report certifying that the tank and its equipment have been brought into compliance with the tank requirements of specification ICC–103B must be furnished by car owner to the party who is to apply the rubber lining. A copy of this report, together with report in approved form certifying that tank has been lined in compliance with all requirements of this specification, must be furnished by party lining the tank to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads.

12. Cancel entire § 78.268 (19 F. R. 3263, June 3, 1954) (15 F. R. 8492, 8493, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.268).

13. Amend entire § 78.269 (17 F. R. 9840, Nov. 1, 1952) (15 F. R. 8493, 8494, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.269) to read as follows:

§ 78.269 *Specification ICC–104; lagged riveted steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.269–1 *Type.* (a) Tanks built under this specification must be cylindrical, with heads designed convex outward, and must have at least one expansion dome with manway and such other external projections as are prescribed herein. When the interior of the tank is divided into compartments, each compartment must have two heads designed convex outward, one expansion dome with manway, and such other external projections as are prescribed herein.

§ 78.269–2 *Lagging.* (a) The tank shell and expansion dome must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to exterior of tank, the lagging over each heater element may be reduced in thickness equivalent to ½ that required for shell.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.269–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal seam, must be at least 240 pounds per square inch.

§ 78.269–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula, but in no case shall the wall thickness be less than specified in paragraph (b) of this section:

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal riveted seam.

(See §78.269–7 (b).)

(1) The thickness of a dished head must be determined by the following formula, but in no case be less than that specified in paragraph (b) of this section.

$$t=\frac{5PL}{6SE}$$

where

t = thickness of plate in inches;
P = calculated bursting pressure in pounds per square inch;
L = main inside radius to which head is dished measured on concave side in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of riveted joint.

When head is formed from one piece, the efficiency may be considered as 100 percent.

(b) The minimum thickness of plates, including minimum thickness of each plate at rivets seams, must be as follows:

Inside diameter of tanks	Bottom sheets	Shell sheets	Expansion dome sheets	Tank heads	Expansion dome heads	Interior compartment heads
	Inch	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
60 inches or under	7/16	¼	5/16	½	5/16	3/8
Over 60 to 78 inches	7/16	5/16	5/16	½	5/16	3/8
Over 78 to 96 inches	½	3/8	5/16	½	5/16	3/8
Over 96 to 112 inches	½	7/16	5/16	9/16	5/16	7/16
Over 112 to 122 inches	½	½	5/16	5/8	5/16	½

(c) The minimum thickness of clad plates, where cladding material has physical properties at least equal to that of the base plate prescribed in § 78.269–5 (a), must be as prescribed in the above table. Where the cladding material does not have the physical properties at least equal to that of the base plate prescribed in § 78.269–5 (a), minimum thickness of base plate must be as prescribed in the above table.

(d) The minimum width of bottom sheet of tank must be 60 inches measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal seam, including overlaps, above the cradle.

(e) For tanks built of one piece cylindrical sections, the thickness specified for bottom sheet must apply to the entire cylindrical shell.

(f) For tanks without underframe the minimum thickness of bottom sheet must not be less than ⅝ inch.

(g) When tank is divided into compartments the interior heads must comply with the requirements for interior compartment heads prescribed herein. When capacity of tank is reduced by moving in the exterior head, a new exterior head of approved contour not less than ⅜ inch thickness must be applied. When the capacity is reduced by the insertion of a new interior head, this head must comply with the requirements for interior compartment heads and the exterior head reapplied. Voids, created by the addition of heads for division into compartments or reduction in capacity, must be provided with a tapped drain hole at top of tank. The top hole must be closed, and the bottom hole may be closed, with not less than ¾ inch nor more than 1½ inch solid pipe plugs having standard pipe threads.

§ 78.269–5 *Material.* (a) All plates for tank and expansion dome must be made of open-hearth boiler-plate flange quality steel to an approved specification. These plates may also be clad with other metals, such as nickel.

(b) All castings used for fittings or attachments to tank must be made of materials to an approved specification.

(c) Rivets must be of the same quality as used for steam boilers and other pressure vessels and be made of steel to an approved specification. When clad plates are used, the rivet heads inside the tank must be clad with the same material or rivets may be of the same material as the cladding, provided rivets have physical properties at least equivalent to rivets prescribed herein.

(d) All external projections must be made of materials specified herein.

(e) Lining or interior coating is not a specification requirement. If applied, it must be approved as to material.

§ 78.269–6 *Tank heads.* (a) Tank heads must be of approved contour and must be designed for pressure on concave side and to main inside radius not exceeding 10 feet. The inside knuckle radius must not be less than 3¾ inches except for interior heads of compartment tanks the knuckle radius must not be less than 1½ inches.

(b) Tank heads may be made of two plates joined by fusion welding in accordance with the requirements prescribed by the AAR Welding Code Appendix W, except that stress relieving is not required if heads are heated to not less than 1200 degrees Fahrenheit for pressing. The fusion-welded joint for tank heads must be located horizontally.

§ 78.269–7 *Riveting.* (a) For computing rivet areas, the effective diameter of a driven rivet is the diameter of its reamed hole, which hole must in no case exceed nominal diameter of rivet by more than 1/16 inch. All rivets must be driven hot.

(b) All seams formed in the manufacture of the tank and expansion dome proper and the attachment of the expansion dome to the tank must be double riveted. Dome head, manway ring, safety valve flange and bottom outlet nozzle flange may be double riveted. Riveted seams and joints must be made metal to metal without interposition of other material, with the exception that the use of two liners not to exceed 1 inch in width and 1/16 inch in thickness, placed at an angle across the longi-

tudinal seams between two rows of rivets near the internal tank heads on compartment cars to prevent the liquid from passing along the longitudinal seams from one compartment to another while cars are being water tested, will be permissible. The efficiency of double riveted seams must be at least 70 percent of the strength of the thinnest plate specified in § 78.269–4 (a) (1), (b) and (c). The efficiency of single riveted seams must be at least 45 percent of the thinnest plate specified in § 78.269–4 (a) (1), (b) and (c). Use of rivets less than ⅝ inch nominal diameter not permissible on any part of tank or attachments.

§ 78.269–8 *Calking.* (a) All seams including those formed by attachments of expansion dome and other external projections, must be calked both inside and outside, except that inside calking of the seam formed by attachment of expansion dome to tank when tank sheet is not cut out to full diameter of dome, is not required and outside calking of seams formed by attachment of all external projections, except expansion dome, is not required. Split calking is prohibited.

(b) The edges of plates at all riveted seams must be beveled so that the angle of the calking edges will be between 60 and 70 degrees with the flat surface of the plate. The extreme calking edge distance, measured from center line of rivet hole, must be at least 1½ times the diameter of the hole and not more than that distance plus ¼ inch.

(c) Electric seal welding of inside calking edges only, in whole or in part, using shielded arc type of electrode, is permitted on new or existing equipment, provided the weld bead has a ⅛ inch minimum to 3/16 inch maximum throat thickness. Qualification of welders must comply with requirements prescribed by AAR Welding Code Appendix W. Welding clad material to edge of clad plates inside of tank is permitted. Other methods of covering edges of clad plates, if approved, may be used.

§ 78.269–9 *Tank mounting.* (a) The manner in which the tank is supported on and securely attached to the car structure must be approved.

§ 78.269–10 *Expansion dome.* (a) The expansion dome must have a capacity, measured from the inside top of shell of tank to the inside top of dome or bottom of any vent pipe projecting inside dome of at least 2 per cent of the total capacity of the tank and dome combined, except that when safety valve or safety vent is applied to side of dome, the effective capacity of dome must be measured from top of safety valve or safety vent opening in the side of dome to inside top of shell of tank.

(b) The opening in manway ring must be at least 16 inches in diameter. The opening in the tank shell within the dome must be at least 29 inches in diameter. When the opening in the tank shell exceeds 30 inches in diameter the opening must be reinforced in an approved manner. When the opening in the tank shell is less than the inside diameter of the dome, and the dome pocket is not closed off in an approved manner, dome pocket drain holes must be provided in the tank shell with nipples projecting inside the tank at least 1 inch.

(c) The dome head must be of approved contour and designed for pressure on concave side.

(d) The entire dome assembly, dome head assembly, or dome header assembly, including the nozzles and flanges, as required, may be built up by fusion welding, provided this detail is fabricated and stress-relieved in accordance with the requirements prescribed by AAR Welding Code Appendix W.

§ 78.269–11 *Closures for manways.* (a) The manway cover must be of approved type and designed to make it impossible to remove the cover while the interior of the tank is subjected to pressure.

(b) Manway rings and covers must be of cast, forged or fabricated steel, malleable iron or other malleable metals.

(c) All covers not hinged must be attached to outside of the dome head by at least a ⅜ inch chain or its equivalent.

(d) All joints between manway covers and their seats must be made tight against leakage of vapor and liquid by use of gaskets of suitable material.

§ 78.269–12 *Gauging, bottom outlet valve operating rod, venting, loading and unloading, and air inlet devices extending through domes of tanks.* (a) Venting, loading and unloading devices of approved design must be installed.

(b) Gauging, bottom outlet valve operating rod and air inlet devices are not specification requirements.

(c) When installed, these devices, including their valves and fittings must be of approved design made of metal not subject to rapid deterioration by the lading. These devices, including their valves and fittings, must be protected from accidental injury by means of a cast or fabricated housing with cover securely attached. Drain holes permitted. Unloading pipe must be securely anchored within the tank. Provision must be made for closing pipe connections of valves.

§ 78.269–13 *Bottom outlets.* (a) The bottom outlet, when installed, must be made of metal not subject to rapid deterioration by the lading, be of approved construction, and be provided with a valve at its upper end and a liquid tight closure at its lower end.

(b) The valve operating mechanism and outlet nozzle construction must be such as to insure against unseating of valve due to stresses or shocks incident to transportation.

(c) Bottom outlet nozzle may be of cast, fabricated or forged metal.

(d) To provide for the attachment of unloading connections, the bottom of the main portion of the outlet nozzle or some fixed attachment thereto, must have external Unified Form Threads, 4 threads to the inch.

(e) For outlet nozzles that project 6 inches or more from shell of tank a "V" groove must be cut (not cast) in the upper part of outlet valve nozzle at a point immediately below lowest part of valve to a depth that will leave thickness of nozzle wall at the root of the "V" not over ⅜ inch. In the case of steam jacketed outlet nozzles this groove must be below the steam chamber but above the bottom of center sill construction. Where outlet nozzle is not a single piece, arrangement must be made to provide the equivalent of the breakage groove.

(f) The flange on the outlet nozzle must be of a thickness which will prevent distortion of the valve seat or valve by any change in contour of the shell resulting from expansion of lading, or other causes, and which will insure that accidental breakage of the outlet nozzle will occur at or below the "V" groove.

(g) The valve must have no wings or stem projecting below the "V" groove in the outlet nozzle. The valve and seat must be readily accessible or removable for repairs, including grinding.

(h) The valve operating mechanism must have means for compensating for variation if the vertical diameter of the tank produced by expansion, weight of the liquid contents, or other causes, and should operate from the interior of the tank, but in the event the rod is carried through the dome, leakage must be prevented by packing in the stuffing box and cap nut.

(i) In no case must extreme projection of bottom outlet equipment extend to within 12 inches above top of rail. All bottom outlet reducers and closures and their attachments must be secured to car by at least ⅜ inch chain or its equivalent, except that outlet closure plugs may be attached by ¼ inch chain. When the bottom outlet closure is of the combination cap and valve type, the pipe connection to the valve must be closed by a plug or cap.

§ 78.269–14 *Safety valves.* (a) The tank must be equipped with one or more safety valves of approved design mounted on expansion dome. Total valve discharge capacity must be sufficient to prevent building up of pressure in the tank in excess of 45 pounds per square inch.

(b) One safety valve must be provided for each tank, or compartment thereof, of 6,650 gallons capacity or less, and two safety valves for each tank, or compartment thereof, of over 6,650 gallons capacity.

(c) Each safety valve must be set to open at a pressure of 35 pounds per square inch and be vapor tight at 28 pounds per square inch. (For tolerance see § 78.269–19 (a).)

(d) Tanks used for the transportation of corrosive liquids, flammable solids, oxidizing materials, or poisonous liquids or solids, Class B, need not be equipped with safety valves, but if not so equipped, must have one safety vent at least 1¾ inches inside diameter closed with a frangible disc of lead or other suitable material of a thickness that will rupture at not more than 45 pounds per square inch. Means for holding disc in place must be such as to prevent distortion or damage to disc when applied. Safety vent closure must be chained or otherwise fastened to prevent misplacement. All tanks equipped with vents must be stenciled "Not For Flammable Liquids".

§ 78.269–15 *Fixtures, reinforcements and attachments not otherwise specified.*

(a) All attachments to tank and dome must be riveted in place and calked to comply with conditions prescribed in §§ 78.269–7 and 78.269–8, or applied by other approved means of at least equal strength and efficiency. Interior heater systems, when installed, must be so constructed that the breaking off of their external connections will not cause leakage of contents of tank.

§ 78.269–16 *Interior heater systems.* (a) See §§ 78.260 and 78.261, heater systems.

§ 78.269–17 *Closures for openings.* (a) All plugs must be solid of good grade cast iron or equivalent with standard pipe threads, of a length which will screw at least 6 threads inside the face of fitting or tank. Plugs when inserted from the outside of tank must have the letter "S" at least ⅜ inch in size stamped with steel stamp or cast on the outside surface to indicate the plug is solid.

§ 78.269–18 *Tests of tanks.* (a) Each tank must be tested, before being put into service and before lagging is applied, by completely filling the tank and dome with water, or other liquid having similar viscosity, of a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 60 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All rivets and closures, except safety valves or safety vents, must be in place while test is made.

(b) Before interior heater systems are placed in service they must be tested with hydrostatic pressure and must be tight at 200 pounds per square inch.

§ 78.269–19 *Tests of safety valves.* (a) Each valve must be tested, before being put into service, by attaching to an air line and applying pressure. The valve must not leak below 28 pounds per square inch pressure. The valve must open at the pressure prescribed in § 78.269–14 (c) with a tolerance of plus or minus 3 pounds.

§ 78.269–20 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–104 in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the builder. This mark must also be stenciled on the jacket in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped mark specified in subparagraph (1) of this paragraph.

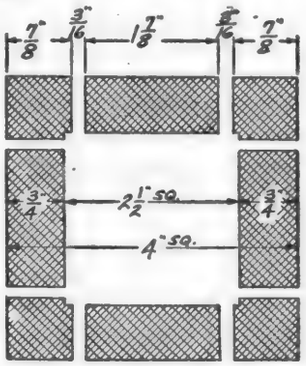
(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases were the tank builder does not complete the fabrication of the tank, such as application of riveted anchors, etc., in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph, by the party assembling the completed car. These marks must also be stenciled on the jacket in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(6) Date on which the interior heater systems were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(7) Identification mark, illustrated herein, for approved manway closure must be stenciled on each side of dome, or jacket if lagged, in line with the ladders and in a color contrasting to color of dome.



Manhole Closure Identification Mark
(Reduced size)

(8) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity, followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the tank, or jacket if lagged, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

(9) Tanks made of clad plates must be stenciled on the jacket "(naming material) _____ clad tank". Lined tanks must be stenciled on the jacket "(naming material) _____ lined tanks". These marks must be in letters at least 2 inches high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.269–21 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of alterations of or additions to tanks or equipment from original design and construction, there must be furnished to the same parties a report in detail of the alterations or additions made to each tank covered by a particular application, showing the initials and numbers of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

14. Amend entire § 78.270 (18 F. R. 3144, June 3, 1954) (17 F. R. 9840, Nov. 1, 1952) (17 F. R. 7287, Aug. 9, 1952) (15 F. R. 8494, 8495, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.270) to read as follows:

§ 78.270 *Specification ICC–105A100; lagged riveted steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed by § 78.259 (a), (b), (c) and (d).

§ 78.270–1 *Type.* (a) Tanks built under this specification must be cylindrical with heads designed convex outward. The tank must be provided with a manway nozzle and cover on top of tank of sufficient diameter to permit access to the interior of the tank and to provide for the proper mounting of venting, loading, unloading, sampling and safety valves, gauging device, thermometer well, and a protective housing on the cover. Other openings in the tank are prohibited.

§ 78.270–2 *Lagging.* (a) The tank shell and manway nozzle must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.075 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to exterior of tank, the lagging over each heater element may be reduced in thickness equivalent to ½ that required for shell.

(b) Before lagging is applied, the tank surface and the entire surface of the metal jacket shall be given a protective coating.

§ 78.270–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal seam, must be at least 495 pounds per square inch.

§ 78.270–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula, but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t = \frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal riveted seam.

(See § 78.270–7 (b).)

(b) The minimum thickness of plates, including thickness of each plate at rivet seams, must be as follows:

Inside diameter of tanks	Bottom sheets	Shell sheets	Tank heads
87 inches or under	9/16	9/16	13/16
Over 87 to 96 inches	5/8	5/8	7/8

(c) The minimum thickness of clad plates, where cladding material has physical properties at least equal to that of the base plate prescribed in § 78.270–6 (a) must be as prescribed in the above table. Where the cladding material does not have physical properties at least equal to that of the base plate prescribed in § 78.270–6 (a), minimum thickness of base plate must be as prescribed in the above table.

(d) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal seam, including overlaps, above the cradle.

§ 78.270–5 *Manway nozzle opening.* (a) Opening in tank for manway nozzle must be reinforced in an approved manner.

§ 78.270–6 *Material.* (a) All plates for tank and manway nozzle must be made of open-hearth boiler plate flange quality steel to an approved specification. These plates may also be clad with other metals, such as nickel.

(b) All castings used for fittings or attachments to tank must be made of material to an approved specification.

(c) Rivets must be of the same quality as used for steam boilers and other pressure vessels, and be made of steel to an approved specification. When clad plates are used, the rivet heads inside the tank must be clad with the same material or rivets may be of the same material as the cladding, provided rivets have physical properties at least equivalent to rivets prescribed herein.

(d) All external projections must be made of materials specified herein.

(e) Lining or interior coating is not a specification requirement. If applied, it must be approved as to material.

§ 78.270–7 *Tank heads.* (a) Tank heads must be of approved contour and designed for pressure on concave side and to main inside radius not exceeding 10 feet. The inside knuckle radius must not be less than 3¾ inches.

§ 78.270–8 *Riveting.* (a) For computing rivet areas the effective diameter of a driven rivet in the diameter of its reamed hole, which hole must in no case exceed nominal diameter of rivet by more than 1/16 inch. All rivets must be driven hot.

(b) All seams formed in the manufacture of the tank and the attachment of manway nozzle to tank must be double-riveted. Riveted seams and joints must be made metal to metal without interposition of other material. The efficiency of the double-riveted seams must be at least 70 per cent of the strength of the thinnest plate.

§ 78.270–9 *Preparation for calking and calking.* (a) The edges of plates at all riveted seams must be beveled so that the angle of the calking edges will be between 60 and 70 degrees with the flat surface of the plate. The extreme calking edge distance, measured from center line of rivet hole, must be at least 1½ times the diameter of the hole and not more than that distance plus ¼ inch.

(b) All seams must be calked on the inside and outside. Split calking is prohibited.

(c) Electric seal welding of inside calking edges only, in whole or in part, using shielded arc type of electrode is permitted on new or existing equipment, provided the weld bead has a 1/8 inch minimum to 3/16 inch maximum throat thickness. Qualification of welders must comply with requirements prescribed with AAR Welding Code Appendix "W". Welding clad material to edges of clad plates inside of tank is permitted. Other methods of covering edges of clad plates, if approved, may be used.

§ 78.270–10 *Tank mounting.* (a) The manner in which the tank is supported on and securely attached to the car structure must be approved.

§ 78.270–11 *Manway nozzle, cover and protective housing.* (a) Manway nozzle must be of cast, forged or rolled steel at least 18 inches inside diameter having approved wall thicknesses and dimensions.

(b) Manway cover must be of forged or rolled steel at least 2¼ inches thick, machined to approved dimensions. Manway cover must be attached to manway nozzle by through or stud bolts not entering tank.

(c) The shearing value of the bolts attaching protective housing to manway cover must not exceed 70 percent of shearing value of bolts attaching manway cover to manway nozzle.

(d) All joints between manway cover and manway nozzle, and between manway cover and valves or other appurtenances mounted thereon, must be made tight against vapor pressure.

(e) Protective housing of cast or fabricated steel must be bolted to manway cover. Housing must be equipped with a suitable metal cover that can be securely closed. Housing cover on tanks used for the transportation of liquefied flammable gases must be provided with an opening equipped with an approved weather-proof covering and having an area at least equal to the total safety valve discharge area. Housing cover must have suitable stop to prevent cover striking loading or unloading connections and be hinged on one side only with approved riveted pin or rod with nuts and cotters. Openings in wall of housing must be equipped with screw plugs or other closures.

§ 78.270–12 *Venting, loading and unloading, gauging and sampling devices and thermometer well.* (a) Venting, loading and unloading valves must be of approved type, made of metal not subject to rapid deterioration by the lading, and must withstand a pressure of 100 pounds per square inch without leakage. The valves must be directly bolted to seatings on manway cover. Pipe connections of the valves must be closed with approved plugs, chained or otherwise fastened to prevent misplacement.

(b) Interior pipes of the loading and unloading valves, except as prescribed in paragraph (d) of this section, may be equipped with excess flow valves of an approved design.

(c) Gauging device, sampling valve, and thermometer well are not specification requirements. When installed, they must be of approved design, made of metal not subject to rapid deterioration by the lading, and must withstand a pressure of 100 pounds per square inch without leakage. Interior pipes of the gauging device and sampling valve, except as prescribed in paragraph (d) of this section, may be equipped with excess flow valves of an approved design. Interior pipe of thermometer well must be anchored in an approved manner to prevent breakage due to vibration. The thermometer well must be closed by an approved valve attached close to the manway cover and closed by a screw plug. Other approved attachments that permit testing thermometer well for leaks without complete removal of the closure may be used.

(d) Tanks used in transportation of liquefied flammable gases must have the interior pipes of the loading and unloading valves, gauging device and sampling valve equipped with excess flow valves of an approved design.

§ 78.270–13 *Safety valves.* (a) The tank must be equipped with one or more safety valves of approved design, made of metal not subject to rapid deterioration by lading and mounted on manway cover. The total valve discharge capacity must be sufficient to prevent building up of pressure in tank in excess of 75 pounds per square inch.

(b) The safety valve must be set to open at a pressure of not exceeding 75 pounds per square inch. (For tolerance see § 78.270–18 (a).)

§ 78.270–14 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) Attachments, other than anchorage and those mounted on manway cover, are prohibited. Heater systems may be applied to exterior of tank by tank bands or other approved method.

§ 78.270–15 *Closures for openings.* (a) Plugs must be of approved type, with standard pipe threads, and of metal not subject to rapid deterioration by the lading.

§ 78.270–16 *Tests of tanks.* (a) Each tank must be tested, before lagging is applied, by completely filling the tank and manway nozzle with water, or other liquid of similar viscosity, having a temperature which must not exceed 100 degrees Fahrenheit during test, and applying a pressure of 100 pounds per square inch. The tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All rivets and closures, except safety valves, must be in place while test is made.

§ 78.270–17 *Tests of exterior heater systems.* (a) Not a specification requirement.

§ 78.270–18 *Tests of safety valves.* (a) Each valve must be tested by air or

gas before being put into service. The valve must open at a pressure not exceeding 75 pounds per square inch and be vapor-tight at 60 pounds per square inch, which limiting pressures must not be affected by any auxiliary closure or other combination.

§ 78.270–19 *Marking.* (a) Each tank must be marked, thus certifying that tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–105A100 in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. This mark must also be stenciled on the jacket in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped mark specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, such as application of riveted anchors, etc., in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph by the party assembling the completed car. These marks must also be stenciled on the jacket in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(6) Water capacity of the tank in pounds stamped plainly and permanently in letters and figures at least ⅜ inch high into the metal of the tank immediately below the marks specified in subparagraphs (2) and (3) of this paragraph. This mark must also be stenciled on the jacket immediately below the dome platform and either directly behind or within 3 feet of the right or left side of ladder, or ladders if there is a ladder on each side of the tank, in letters and figures at least 2 inches high as follows:

WATER CAPACITY
000000 POUNDS

(7) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity, followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the jacket, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

(8) Tanks made of clad plates must be stenciled on the jacket "(naming material) ____ clad tank". Lined tanks must be stenciled on the jacket "(naming material) _____ lined tank". These marks must be in letters at least 2 inches high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.270–20 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of alterations of or additions to tanks or equipment from original design and construction, there must be furnished to the same parties a report in detail of the alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

15. Cancel entire § 78.271 (18 F. R. 3144, June 2, 1953) (17 F. R. 9840, 9841, Nov. 1, 1952) (16 F. R. 11783, Nov. 21, 1951) (15 F. R. 8495 to 8497, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.271).

16. Cancel entire § 78.272 (18 F. R. 3144, June 2, 1953) (17 F. R. 9841, Nov. 1, 1952) (15 F. R. 8497, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.272).

17. Cancel entire § 78.273 (18 F. R. 3145, June 2, 1953) (17 F. R. 9841, Nov. 1, 1952) (15 F. R. 8497, 8498, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.273).

18. Cancel entire § 78.274 (18 F. R. 3145, June 2, 1953) (17 F. R. 9841, Nov. 1, 1952) (15 F. R. 8498, Dec. 2, 1950) (49 CFR 1950 Rev., 1954, Supp., 78.274).

19. Amend entire § 78.275 (20 F. R. 4420, June 23, 1955) (15 F. R. 8498 to 8500, Dec. 2, 1950) (49 CFR 78.275, 1950 Rev.) to read as follows:

§ 78.275 *Specification ICC–106A500; forged lap-welded steel tanks, or ICC 106A500–X forge-welded steel tanks with fusion welded longitudinal barrel sections, to be mounted on a car.* (a) Wherever the word "approved" is in this specification, it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.275–1 *Type and general requirements.* (a) Tanks built under this specification must be cylindrical, with heads designed convex inward. All openings must be located in the heads. Tanks must be securely attached to car structure in such a manner that they may be removed for filling by the consignor and emptying by the consignee. Each tank must have a capacity of at least 1,600 pounds and not more than 2,600 pounds of water.

(b) The tanks must be fabricated by approved methods.

(c) For tanks made in foreign countries, a chemical analysis of material and all tests as specified must be carried out within the limits of the United States under the supervision of a competent and disinterested inspector.

§ 78.275–2 *Thickness of plates.* (a) The wall thickness of tanks must be at least $\frac{13}{32}$ inch and must be such that at the test pressure the calculated fiber stress in wall of tank will not be in excess of the following.

	Maximum fiber stress, pounds per square inch
Shell wall having longitudinal seam:	
Water gas lap-welded	17,500
Fusion-welded	15,750

as calculated by the following formula:

$$S=\frac{P(1.3D^2+0.4d^2)}{D^2-d^2}$$

where

P=interior test pressure in pounds per square inch;
D=outside diameter in inches;
d=inside diameter in inches;
S=wall stress in pounds per square inch.

(b) Tank heads must be of a thickness sufficient to meet the test requirements of § 78.275–12 (a), (b) and (c), and provide for the threading of openings therein as prescribed in § 78.275–4 (b).

§ 78.275–3 *Material.* (a) All plates for tank must be make of uniform open-hearth steel of good welding quality, free from cracks, laminations, or other defects injurious to the finished tank, and have an elastic limit of not more than 45,000 pounds per square inch and an elongation of at least 20 percent in 8 inches; a test specimen must also bend cold through 180 degrees flat on itself without cracking on the outside of the bent portion; the tensile and bend test specimens must be taken from the finished rolled material, and there must be at least one tensile test and one bend test on specimens from each heat. Chemical analysis must show maximum content per cent not greater than as follows:

Carbon—0.20.
Phosphorus—0.04.
Sulphur—0.05.

(b) All plates must have their heat number and the name or brand of the manufacturer legibly stamped on them at the rolling mill.

§ 78.275–4 *Tank heads.* (a) The heads must be hot pressed, flanging and dishing being done in one heat, so as to make a straight flange having a minimum length of 4 inches and a radius of dish not greater than the diameter of the tank. They must be inserted into the tank shell with flange extending outward and must have a snug drive fit into the shell.

(b) Threads for openings in tank heads for valves and vents must be American Standard taper, tapped to gauge, clean cut, even and without checks to insure tight joints.

§ 78.275–5 *Welding.* (a) All joints and seams other than the longitudinal seam for which alternate requirements are prescribed in paragraph (b) of this section, must be made by the water gas lap-weld process, or other lap-weld processes, which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce equivalent or su-

perior results. All joints and seams other than those provided for in paragraph (b) of this section, must be thoroughly hammered or rolled to insure perfect welds. The flanges of the heads must be forged lap-welded to the shell and then crimped inwardly toward the axis line at least 1 inch on the radius. Welding and crimping must be accomplished in 1 heat.

(b) Alternate welding procedure: Longitudinal seams may be fusion welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints fabricated by means of fusion welding must be in accordance with the requirements of AAR Welding Code, Appendix W.

§ 78.275–6 *Heat treatment.* (a) Each finished tank, before being subjected to hydrostatic test, must be uniformly and properly heat-treated by heating to a temperature of at least 1,200 degrees Fahrenheit to remove any undue strains due to processes of manufacture.

§ 78.275–7 *Tank mounting.* (a) The manner in which the tanks are mounted on and securely attached to the car structure must be approved.

§ 78.275–8 *Protective housing and cover.* (a) Valves and other closures of openings in tank heads, except fusible plug vents, must be protected against accidental injury by a detachable cast or pressed housing at least 3/16 inch thick, which much not project beyond the flanged ends of the tank and must be securely fastened to the tank head. Housing must be provided with an opening having an area equal to the total safety valve or vent discharge area.

(b) The upper head of tanks mounted vertically on the car structure must be completely covered by a light metal cover designed to exclude moisture, cinders, and other foreign matter, and to be displaced by pressure of gas discharged through safety valves or vents.

§ 78.275–9 *Venting, loading and unloading valves.* (a) These valves must be of approved type, made of metal not subject to rapid deterioration by lading, and must withstand a pressure of 500 pounds per square inch without leakage. The valves must be screwed directly into tank heads or attached to tank heads by other approved methods. Provision must be made for closing pipe connections of the valves.

§ 78.275–10 *Safety valves or vents.* (a) Unless prohibited for type of service in which tank is used, the tank must be equipped with one or more safety valves or vents of approved type, made of metal not subject to rapid deterioration by the lading and be screwed directly into tank heads or attached to tank heads by other approved methods. The total valve or vent discharge capacity must be sufficient to prevent building up of pressure in the tank in excess of 3/4 of the test pressure; when safety vents of the fusible plug type are used, the required discharge capacity must be available in each head.

(b) Tank mounted vertically on the car structure must have safety valves, or vents of the frangible disc type, which must be located on the upper head.

(c) Safety valves must be set to open and vents of the frangible disc type must function at a pressure not exceeding 375 pounds per square inch. Vents of the fusible plug type must function at a temperature not exceeding 175 degrees Fahrenheit. (For tolerance see § 78.275–13.)

§ 78.275–11 *Fixtures.* (a) Siphon pipes and their couplings on the inside of the tank head and lugs on the outside of the tank head for attaching the valve protection housing may be fusion-welded in place in accordance with A. A. R. Welding Code Appendix W, provided they are properly heat-treated in accordance with § 78.275–6 (a) at the time the entire tank is heat-treated. All other fixtures and appurtenances, except as provided in §§ 78.275–7, 78.275–8, 78.275–9 and 78.275–10 are prohibited.

§ 78.275–12 *Tests of tank.* (a) After heat-treatment tanks must be subjected to hydrostatic test in a water jacket, or by other accurate method, operated so as to obtain reliable data. No tank shall have been subjected previously to internal pressure within 100 pounds of the test pressure. Each tank must be tested to 500 pounds per square inch. Pressure must be maintained for 30 seconds and sufficiently longer to insure complete expansion of tank. Pressure gauge must permit reading to accuracy of one percent. Expansion gauge must permit reading of total expansion to accuracy of one percent. Expansion must be recorded in cubic centimeters.

(b) Permanent volumetric expansion must not exceed 10 per cent of total volumetric expansion at test pressure.

(c) Each finished tank must be subjected to interior air pressure test of at least 100 pounds per square inch under conditions favorable to detection of any leakage. No leaks shall appear.

(d) Repairs of leaks detected in manufacture or test must be made by the same process as employed in manufacture of tank. Calking, soldering, or similar repairing is prohibited.

§ 78.275–13 *Tests of safety valves and vents.* (a) Each valve must be tested by air or gas before being put into service. The valve must open at a pressure not exceeding 375 pounds per square inch and be vapor tight at 300 pounds per square inch which limiting pressures must not be affected by any auxiliary closure or other combination.

(b) For safety vents of the frangible disc type. A sample of the disc used must burst at a pressure of not exceeding 375 pounds per square inch and be vapor-tight at 300 pounds per square inch.

(c) For safety vents of the fusible plug type. A sample of the fusible plugs used must function at a temperature of not exceeding 175 degrees Fahrenheit, and be vapor tight at a temperature of 130 degrees Fahrenheit.

§ 78.275–14 *Alterations and maintenance of tanks.* (a) All prescribed markings on tanks must be kept legible. Copy of the said markings, in letters and figures of the prescribed size stamped on a brass plate secured to the tank, is authorized. Markings must not be changed except as follows:

(1) By application of additional marks not affecting the test pressure or water capacity. These must not obliterate previously applied marks.

(2) By application of test pressure marks, or alteration of such marks, to indicate a reduced test pressure. This is authorized only for tanks that have not failed in the 5-year test.

(3) By change of serial numbers or ownership marks, or both. A report must be filed with the Bureau of Explosives in sufficient detail so that previous serial number and ownership mark can be determined for each tank, arranged by lot numbers or by consecutive serial numbers.

§ 78.275–15 *Marking.* (a) Each tank must be plainly and permanently marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be stamped into the metal of one head or chime, in letters and figures at least 3/8 inch high, as follows:

(1) When longitudinal seam is water gas lap-welded, the mark must be ICC–106A500. When longitudinal seam is fusion-welded, the mark must be ICC–106A500–X.

(2) Serial number immediately below the stamped mark specified in subparagraph (1) of this paragraph.

(3) Inspector's official mark immediately below the stamped mark specified in subparagraph (2) of this paragraph.

(4) Name, mark (other than trademark), or initials of company or person for whose use the tanks are being made, which must be recorded with the Bureau of Explosives.

(5) Date of tank test (month and year), such as 1–54 for January 1954, so placed that date of subsequent tests may easily be added thereto.

(6) Water capacity—0000 Pounds.

§ 78.275–16 *Inspection and reports.* (a) Purchaser of tanks must provide for inspection by a competent inspector as follows:

(1) The inspector must carefully inspect all plates from which tanks are to be made, and records pertaining thereto, and plates which do not comply with the requirements of this specification must be rejected.

(2) The inspector must secure complete certified records, including chemical analyses and physical tests on samples taken from each heat of steel used in the manufacture of the plate.

(3) The inspector must report capacity in pounds of water and tare weight of each tank and the minimum thickness of tank wall noted.

(4) The inspector must make such inspection as may be necessary to see that all the requirements of this specification are fully complied with, must see that the finished tanks are properly heat-treated, and must witness all air and hydrostatic tests.

(5) The inspector must stamp his official mark on each accepted tank imme-

diately below the serial number, and make certified report (See paragraph (b) of this section) to the builder, to the company or person for whose use the tanks are made, to the builder of the car structure on which the tanks are to be mounted, if any, to the Bureau of Explosives, and to the Secretary, Mechanical Division, Association of American Railroads.

(b) Inspector's report required herein must be in the following form:

(Place) _____
(Date) _____

STEEL TANKS

It is hereby certified that drawings were submitted for these tanks under A. A. R. Application for Approval No. ____ and approved by the A. A. R. Committee on Tank Cars under date of _____
Built for _____ Company
Location at _____
Built by _____ Company
Location at _____
Consigned to _____ Company
Location at _____
Quantity _____
Size _____ inches outside diameter by _____ inches long.

Marks stamped into the head or chime of the tank are:

Specification ICC _____
Serial numbers _____ to _____ inclusive
Inspector's mark _____
Owner's mark _____
Test date _____
Water capacity (see Record of Hydrostatic Tests).
Tare weights (Yes or No) (See Record of Hydrostatic Tests).
These tanks were made by process of _____

The steel used was identified as indicated by the attached list showing the serial number of each tank, followed by the heat number of the plate, head, and bottom used in the tank.

The steel used was verified as to chemical analysis and record thereof is attached hereto. The heat numbers were stamped into the metal.

All material, such as plates, billets, and seamless tubing, was inspected and each tank was inspected both before and after closing in the ends; all that was accepted was found free from seams, cracks, laminations, and other defects which might prove injurious to the strength of the tank. The processes of manufacture and heat treatment of tanks were supervised and found to be efficient and satisfactory.

The tank walls were measured and the minimum thickness noted was _____ inch. The outside diameter was determined by a close approximation to be _____ inches. The wall stress was calculated to be _____ pounds per square inch under an internal pressure of _____ pounds per square inch.

Hydrostatic tests, bend and tensile tests of material, and other tests, as prescribed in this specification were made in the presence of the inspector and all material and tanks accepted were found to be in compliance with the requirements of this specification. Records thereof are attached hereto.

I hereby certify that all of these tanks proved satisfactory in every way and comply with the requirements of Interstate Commerce Commission.

Specification No. _____
(Signed) _____
(Inspector)

(Place) _____
(Date) _____

RECORD OF CHEMICAL ANALYSIS OF STEEL FOR TANKS

Numbered _____ to _____ inclusive
Size _____ inches outside diameter by _____ inches long
Made by _____ Company
For _____ Company

Heat No.	Chemical analysis						
	C	P	S	Si	Mn	Ni	Cr

The analyses were made by:
(Signed) _____
(Place) _____
(Date) _____

RECORD OF HYDROSTATIC TESTS ON TANKS

Numbered _____ inclusive
Size _____ inches outside diameter by _____ inches long
Made by _____ Company
For _____ Company

Serial Nos. of tanks tested	Actual test pressure (pounds per square inch)	Total expansion (cc.)[1]	Permanent expansion (cc.)[1]	Percent ratio of permanent expansion to total expansion	Tare weight pounds[2]	Capacity in pounds of water at 60° F.

[1] If the tests are made by a method involving the measurement of the amount of liquid forced into the tank by the test pressure then the basic data, on which the calculations are made, such as the pump factors, temperature of liquid, coefficient of compressibility of liquid, etc., must also be given.

[2] Do not include protective housing and cover but state whether with or without valves.

(Signed) _____

(c) Before a tank built under this specification is placed in service, the builder must furnish to the owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in proper form, certifying that the tank and its equipment comply with all the requirements of this specification including information as to the serial numbers, dates of test, and ownership marks on the tanks.

(d) In the event the owner of the tank instead of the builder elects to furnish the appurtenances such as valve protection caps, loading and unloading valves, and safety valves or vents of the frangible disc or fusible plug type, the owner must furnish to the Bureau of Explosives and to the Secretary, Mechanical Division, Association of American Railroads, a report in proper form certifying that these appurtenances comply with all the requirements of this specification.

(e) In case of alterations of or additions to tanks or equipment from original design and construction or of repairs, there must be furnished to the owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in detail of the repairs, alterations, or additions made to each tank covered by a particular application, showing the serial number of each tank involved and stating that heat treatment called for by the particular type of repair authorized has been performed and that after repairs, alterations, or additions, the tests prescribed in § 78.275–12 were made, results of hydrostatic tests reported, and tanks marked as prescribed by retest table No. 2 of § 73.31 of this chapter.

20. Amend entire § 78.276 (15 F. R. 8501, Dec. 2, 1950) (49 CFR 78.276, 1950 Rev.) to read as follows:

§ 78.276 *Specification ICC–106A800; forged lap-welded steel tanks, or ICC–106A800–X; forge-welded steel tanks with fusion-welded longitudinal barrel sections, to be mounted on a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.276–1 *Type and general requirements.* (a) Tanks built under this specification must be cylindrical, with heads designed convex inward. All openings must be located in the heads. Tanks must be securely attached to car structure in such a manner that they may be removed for filling by the consignor and emptying by the consignee. Each tank must have a capacity of at least 1,600 pounds and not more than 2,600 pounds of water.

(b) The tanks must be fabricated by approved methods.

(c) For tanks made in foreign countries, a chemical analysis of material and all tests as specified must be carried out within the limits of the United States under the supervision of a competent and disinterested inspector.

§ 78.276–2 *Thickness of plates.* (a) The wall thickness of tanks must be at least $^{13}/_{32}$ inch and must be such that at the test pressure the calculated fiber stress in wall of tank will not be in excess of the following:

	Maximum fiber stress, pounds per square inch
Shell wall having longitudinal seam:	
Water gas lap-welded	17,500
Fusion-welded	15,750

as calculated by the following formula:

$$S=\frac{P(1.3D^2+0.4d^2)}{D^2-d^2}$$

where
P = interior test pressure in pounds per square inch;
D = outside diameter in inches;
d = inside diameter in inches;
S = wall stress in pounds per square inch.

(b) Tank heads must be of a thickness sufficient to meet the test requirements of § 78.276–12 (a), (b) and (c), and provide for the threading of openings therein as prescribed in § 78.276–4 (b).

§ 78.276–3 *Material.* (a) All plates for tank must be made of uniform open-hearth steel of good welding quality, free from cracks, laminations, or other defects injurious to the finished tank, and have an elastic limit of not more than 45,000 pounds per square inch and an

elongation of at least 20 per cent in 8 inches; a test specimen must also bend cold through 180 degrees flat on itself without cracking on the outside of the bent portion; the tensile and bend test specimens must be taken from the finished rolled material, and there must be at least one tensile test and one bend test on specimens from each heat. Chemical analysis must show maximum content percent not greater than as follows:

Carbon—0.20.
Phosphorus—0.04.
Sulphur—0.05.

(b) All plates must have their heat number and the name or brand of the manufacturer legibly stamped on them at the rolling mill.

§ 78.276–4 *Tank heads.* (a) The heads must be hot pressed, flanging and dishing being done in one heat, so as to make a straight flange having a minimum length of 4 inches and a radius of dish not greater than the diameter of the tank. They must be inserted into the tank shell with flange extending outward and must have a snug drive fit into the shell.

(b) Threads for openings in tank heads for valves and vents must be American Standard taper, tapped to gauge, clean cut, even and without checks to insure tight joints.

§ 78.276–5 *Welding.* (a) All joints and seams, other than the longitudinal seam for which alternate requirements are prescribed in paragraph (b) of this section, must be made by the water gas lap-weld process, or other lap-weld processes, which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce equivalent or superior results. All joints and seams, other than those provided for in paragraph (b) of this section, must be thoroughly hammered or rolled to insure perfect welds. The flanges of the heads must be forged lap-welded to the shell and then crimped inwardly toward the axis line at least 1 inch on the radius. Welding and crimping must be accomplished in 1 heat.

(b) *Alternate welding procedure.* Longitudinal seams may be fusion welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints fabricated by means of fusion welding must be in accordance with the requirements of AAR Welding Code, Appendix W.

§ 78.276–6 *Heat treatment.* (a) Each finished tank, before being subjected to hydrostatic test, must be uniformly and properly heat-treated by heating to a temperature of at least 1,200 degrees Fahrenheit to remove any undue strains due to processes of manufacture.

§ 78.276–7 *Tank mounting.* (a) The manner in which the tanks are mounted on and securely attached to the car structure must be approved.

§ 78.276–8 *Protective housing and cover.* (a) Valves and other closures of openings in tank heads, except fusible plug vents, must be protected against accidental injury by a detachable cast or pressed housing at least 3/16 inch thick, which must not project beyond the flanged ends of the tank and must be securely fastened to the tank head. Housing must be provided with an opening having an area equal to the total safety valve or vent discharge area.

§ 78.276–9 *Venting, loading and unloading valves.* (a) These valves must be of approved type, made of metal not subject to rapid deterioration by the lading, and must withstand a pressure of 800 pounds per square inch without leakage. The valves must be screwed directly into tank heads or attached to tank heads by other approved methods. Provision must be made for closing the pipe connection of the valves.

§ 78.276–10 *Safety valves or vents.* (a) Unless prohibited for type of service in which tank is used, the tank must be equipped with one or more safety valves or vents of approved type, made of metal not subject to rapid deterioration by the lading and be screwed directly into tank heads or attached to tank heads by other approved methods. The total valve or vent discharge capacity must be sufficient to prevent building up of pressure in the tank in excess of 3/4 of the test pressure; when safety vents of the fusible plug type are used, the required discharge capacity must be available in each head.

(b) Tanks mounted vertically on the car structure must have safety valves, or vents of the frangible disc type, which must be located on the upper head.

(c) Safety valves must be set to open and vents of the frangible disc type must function at a pressure of not exceeding 600 pounds per square inch. Vents of the fusible plug type must function at a temperature not exceeding 175 degrees Fahrenheit. (For tolerance see § 78.276–13.)

§ 78.276–11 *Fixtures.* (a) Siphon pipes and their couplings on the inside of the tank head and lugs on the outside of the tank head for attaching the valve protection housing may be fusion-welded in place in accordance with A. A. R. Welding Code Appendix W, provided they are properly heat-treated in accordance with § 78.276–6 (a) at the time the entire tank is heat-treated. All other fixtures and appurtenances, except as provided in § 78.276–7, §78.276–8, §78.276–9 and § 78.276–10, are prohibited.

§ 78.276–12 *Tests of tanks.* (a) After heat-treatment tanks must be subjected to hydrostatic test in a water jacket, or by other accurate method, operated so as to obtain reliable data. No tank shall have been subjected previously to internal pressure within 100 pounds of the test pressure. Each tank must be tested to 800 pounds per square inch. Pressure must be maintained for 30 seconds and sufficiently longer to insure complete expansion of tank. Pressure gauge must permit reading to accuracy of one per cent. Expansion gauge must permit reading of total expansion to accuracy of one per cent. Expansion must be recorded in cubic centimeters.

(b) Permanent volumetric expansion must not exceed 10 percent of total volumetric expansion at test pressure.

(c) Each finished tank must be subjected to interior air pressure test of at least 100 pounds per square inch under conditions favorable to detection of any leakage. No leaks shall appear.

(d) Repairs of leaks detected in manufacture or test must be made by the same process as employed in manufacture of tank. Calking, soldering, or similar repairing is prohibited.

§ 78.276–13 *Tests of safety valves and vents.* (a) Each valve must be tested by air or gas before being put into service. The valve must open at a pressure not exceeding 600 pounds per square inch and be vapor tight at 480 pounds per square inch which limiting pressures must not be affected by any auxiliary closure or other combination.

(b) For safety vents of the frangible disc type. A sample of the disc used must burst at a pressure of not exceeding 600 pounds per square inch and be vapor tight at 480 pounds per square inch.

(c) For safety vents of the fusible plug type. A sample of the fusible plugs used must function at a temperature of not exceeding 175 degrees Fahrenheit, and be vapor tight at a temperature of 130 degrees Fahrenheit.

§ 78.276–14 *Alterations and maintenance of tanks.* (a) All prescribed markings on tanks must be kept legible. Copy of the said markings, in letters and figures of the prescribed size stamped on a brass plate secured to the tank, is authorized. Markings must not be changed except as follows:

(1) By application of additional marks not affecting the test pressure or water capacity. These must not obliterate previously applied marks.

(2) By application of test pressure marks, or alteration of such marks, to indicate a reduced test pressure. This is authorized only for tanks that have not failed in the 5-year test.

(3) By change of serial numbers or ownership marks, or both. A report must be filed with the Bureau of Explosives in sufficient detail so that previous serial number and ownership mark can be determined for each tank, arranged by lot numbers or by consecutive serial numbers.

§ 78.276–15 *Marking.* (a) Each tank must be plainly and permanently marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be stamped into the metal of one head or chime, in letters and figures at least 3/8 inch high, as follows:

(1) When longitudinal seam is water gas lap-welded, the mark must be ICC–106A800. When longitudinal seam is fusion-welded, the mark must be ICC–106A800–X.

(2) Serial number immediately below the stamped marked specified in subparagraph (1) of this paragraph.

(3) Inspector's official mark immediately below the stamped mark specified in subparagraph (2) of this paragraph.

(4) Name, mark (other than trademark), or initials of company or person for whose use the tanks are being made, which must be recorded with the Bureau of Explosives.

(5) Date of tank test (month and year), such as 1-54 for January, 1954, so placed that date of subsequent tests may easily be added thereto.

(6) Water capacity—0000 Pounds.

§ 78.276–16 *Inspection and reports.* (a) Purchaser of tanks must provide for inspection by a competent inspector as follows:

(1) The inspector must carefully inspect all plates from which tanks are to be made, and records pertaining thereto, and plates which do not comply with the requirements of this specification must be rejected.

(2) The inspector must secure complete certified records, including chemical analyses and physical tests on samples taken from each heat of steel used in the manufacture of the plate.

(3) The inspector must report capacity in pounds of water and tare weight of each tank and the minimum thickness of tank wall noted.

(4) The inspector must make such inspection as may be necessary to see that all the requirements of this specification are fully complied with, must see that the finished tanks are properly heat-treated, and must witness all air and hydrostatic tests.

(5) The inspector must stamp his official mark on each accepted tank immediately below the serial number, and make certified report (see paragraph (b) of this paragraph) to the builder, to the company or person for whose use the tanks are being made, to the builder of the car structure on which the tanks are to be mounted, if any, to the Bureau of Explosives, and to the Secretary, Mechanical Division, Association of American Railroads.

(b) Inspector's report required herein must be in the following form:

(Place) _____
(Date) _____

STEEL TANKS

It is hereby certified that drawings were submitted for these tanks under A. A. R. Application for Approval No. _____ and approved by the A. A. R. Committee on Tank Cars under date of _____

_____

Built for _____ Company
Location at _____
Built by _____ Company
Location at _____
Consigned to _____ Company
Location at _____
Quantity _____
Size _____ inches outside diameter by _____ inches long

Marks stamped into the head or chime of the tank are:

Specification ICC _____
Serial numbers _____ to _____ inclusive
Inspector's mark _____
Owner's mark _____
Test date _____
Water capacity (See Record of Hydrostatic Tests)
Tare weights (Yes or No). (See Record of Hydrostatic Tests)
These tanks were made by process of _____

_____

_____

The steel used was identified as indicated by the attached list showing the serial number of each tank, followed by the heat number of the plate, head, and bottom used in the tank.

The steel used was verified as to chemical analysis and record thereof is attached hereto. The heat numbers were stamped into the metal.

All material, such as plates, billets, and seamless tubing, was inspected and each tank was inspected both before and after closing in the ends; all that was accepted was found free from seams, cracks, laminations, and other defects which might prove injurious to the strength of the tank. The processes of manufacture and heat treatment of tanks were supervised and found to be efficient and satisfactory.

The tank walls were measured and the minimum thickness noted was _____ inch. The outside diameter was determined by a close approximation to be _____ inches. The wall stress was calculated to be _____ pounds per square inch under an internal pressure of _____ pounds per square inch.

Hydrostatic tests, bend and tensile tests of material, and other tests, as prescribed in this specification were made in the presence of the inspector and all material and tanks accepted were found to be in compliance with the requirements of this specification. Records thereof are attached hereto.

I hereby certify that all of these tanks proved satisfactory in every way and comply with the requirements of Interstate Commerce Commission Specification No. _____

(Signed) _____
(Inspector)

(Place) _____
(Date) _____

RECORD OF CHEMICAL ANALYSIS OF STEEL FOR TANKS

Numbered _____ to _____ inclusive
Size _____ inches outside diameter by _____ inches long
Made by _____ Company
For _____ Company

Heat No.	Chemical analysis						
	C	P	S	Si	Mn	Ni	Cr

The analyses were made by:

(Signed) _____
(Place) _____
(Date) _____

RECORD OF HYDROSTATIC TESTS ON TANKS

Numbered _____ to _____ inclusive
Size _____ inches outside diameter by _____ inches long
Made by _____ Company
For _____ Company

Serial Nos. of tanks tested	Actual test pressure (pounds per square inch)	Total expansion (cc.)[1]	Permanent expansion (cc.)[1]	Percent ratio of permanent expansion to total expansion	Tare weight pounds[2]	Capacity in pounds of water at 60° F.

[1] If the tests are made by a method involving the measurement of the amount of liquid forced into the tank by the test pressure then the basic data, on which the calculations are made, such as the pump factors, temperature of liquid, coefficient of compressibility of liquid, etc., must also be given.

[2] Do not include protective housing and cover but state whether with or without valves.

(Signed) _____

(c) Before a tank built under this specification is placed in service, the builder must furnish to the owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in proper form, certifying that the tank and its equipment comply with all the requirements of this specification including information as to the serial numbers, dates of test, and ownership marks on the tanks.

(d) In the event the owner of the tank instead of the builder elects to furnish the appurtenances such as valve protection caps, loading and unloading valves, and safety valves or vents of the frangible disc or fusible plug type, the owner must furnish to the Bureau of Explosives and to the Secretary, Mechanical Division, Association of American Railroads, a report in proper form certifying that these appurtenances comply with all the requirements of this specification.

(e) In case of alterations of or additions to tanks or equipment from original design and construction or of repairs, there must be furnished to the owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in detail of the repairs, alterations, or additions made to each tank covered by a particular application, showing the serial number of each tank involved and stating that heat treatment called for by the particular type of repair authorized has been performed and that after repairs, alterations, or additions, the tests prescribed in § 78.276–12 were made, results of hydrostatic tests reported, and tanks marked as prescribed by retest table No. 2 of § 73.31 of this chapter.

21. Amend entire § 78.277 (20 F. R. 955 to 958, Feb. 15, 1955) (49 CFR 78.277, 1950 Rev.) to read as follows:

§ 78.277 *Specification ICC–107A * * *; seamless steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed by § 78.259 (a), (b), (c), and (d).

§ 78.277–1 *Type and general requirements.* (a) Tanks built under this specification must be hollow forged or drawn in one piece. Forged tanks must be machined inside and outside before ends are necked-down and, after necking-down, the ends must be machined to size on the ends and outside diameter. Machining not necessary on inside or outside of seamless steel tubing, but required on ends after necking down.

(b) Tanks must be fabricated by approved methods.

(c) For tanks made in foreign countries, chemical analysis of material and all tests as specified must be carried out within the limits of the United States under supervision of a competent and disinterested inspector; in addition to which, provisions in § 78.277–17 (b) and (c) must be carried out at the point of manufacture by a recognized inspection bureau with principal office in the United States.

(d) The terms "marked end" and "marked test pressure" used throughout this specification are defined as follows:

(1) "Marked end" is that end of the tank on which marks prescribed in § 78.277–16 are stamped.

(2) "Marked test pressure" is that pressure in pounds per square inch which is indicated by the figures substituted for the * * * in the marking ICC–107–A * * * stamped on the marked end of tank.

(e) The gas pressure at 130 degrees Fahrenheit in the tank must not exceed 7/10 of the marked test pressure of the tank.

§ 78.277–2 *Thickness of wall.* (a) Minimum thickness of wall of each finished tank must be such that a pressure equal to 7/10 of the marked test pressure of the tank, the calculated fiber stress in pounds per square inch at inner wall of tank multiplied by 3.0 will not exceed the tensile strength of any specimen taken from the tank and tested as prescribed in § 78.277–5 (b). Minimum wall thickness shall be ¼ inch.

(b) Calculations to determine the maximum marked test pressure permitted to be marked on the tank must be made by the formula:

$$P=\frac{10S(D^2-d^2)}{7(D^2+d^2)}$$

where

P = maximum marked test pressure permitted;

$$S=\frac{U}{3.0}$$

where

U = tensile strength of that specimen which shows the lower tensile strength of the two specimens taken from the tank and tested as prescribed in § 78.277–5 (b).

3.0 = Factor of safety.

$\frac{D^2-d^2}{D^2+d^2}$ = The smaller value obtained for this factor by the operations specified in paragraph (c) of this section.

(c) Measure at one end, in a plane perpendicular to the longitudinal axis of the tank and at least 18 inches from that end before necking down:

d = Maximum inside diameter (inches) for the location under consideration; to be determined by direct measurement to an accuracy of 0.05 inch.

t = Minimum thickness of wall for the location under consideration; to be determined by direct measurement to an accuracy of 0.001 inch.

Take $D=d+2t$.

Calculate the value of

$$\frac{D^2-d^2}{D^2+d^2}$$

Make similar measurements and calculation for a corresponding location at the other end of the tank.

Use the smaller result obtained, from the foregoing, in making calculations prescribed in paragraph (b) of this section.

§ 78.277–3 *Material.* (a) Tanks must be made from open-hearth or electric steel of uniform quality. Material must be free from seams, cracks, laminations, or other defects injurious to finished tank. If not free from such defects, the surface may be machined or ground to eliminate these defects. Forgings and seamless tubing for bodies of tanks must be stamped with heat numbers.

(b) Steel must conform to the following requirements as to chemical composition:

	Carbon steel (percent)	Alloy steel (percent)
Carbon, not over	0.55	[1] 0.50
Manganese, not over	.80	[1] 1.65
Phosphorus:		
Acid, not over	.05	.05
Basic, not over	.04	.04
Sulphur:		
Acid, not over	.06	.06
Basic, not over	.05	.05
Sum of manganese and carbon [1] not over	----------	2.10

[1] Steel containing other alloying elements may be used if approved.

(1) For instructions as to the obtaining and checking of chemical analysis, see § 78.277–17 (b) (3).

§ 78.277–4 *Heat treatment.* (a) Each necked-down tank must be uniformly and properly heat treated. Heat treatment must consist of annealing or normalizing and drawing. Heat treatment involving the use of liquid quenching medium is prohibited, except under special approval. All scale must be removed from inside and outside of tank to an extent sufficient to allow proper inspection.

(b) To check uniformity of heat treatment, Brinell hardness tests must be made at 18-inch intervals on the entire longitudinal axis. The hardness must not vary more than 35 points in the length of the tank. No hardness tests need be taken within 12 inches from point of head to shell tangency.

§ 78.277–5 *Physical tests.* (a) Physical tests must be made on 2 test specimens 0.505 inch in diameter within 2-inch gauge length, taken 180 degrees apart, 1 from each ring section cut from each end of each forged or drawn tube before necking down, or 1 from each prolongation at each end of each necked-down tank. These test specimen ring sections or prolongations must be heat treated with the necked-down tank which they represent. The width of the test specimen ring section must be at least its wall thickness. Only when diameters and wall thickness will not permit removal of 0.505 by 2-inch tensile test bar, laid in the transverse direction, may test bar cut in the longitudinal direction be substituted. When the thickness will not permit obtaining a 0.505 specimen, then the largest diameter specimen obtainable in the longitudinal direction shall be used. Specimens shall have bright surface and a reduced section. When 0.505 specimen is not used the gauge length shall be a ratio of 4 to 1 length to diameter.

(b) Elastic limit as determined by extensometer, must not exceed 70 percent of tensile strength. Determination shall be made at cross head speed of not more than 0.125 inch per minute with an extensometer reading to 0.0002 inch. The extensometer shall be read at increments of stress not exceeding 5,000 pounds per square inch. The stress at which the strain first exceeds

$$\frac{\text{stress (pounds per square inch)}}{30{,}000{,}000\text{ (pounds per square inch)}}$$

plus 0.005 (inch per inch) shall be recorded as the elastic limit.

(1) Elongation must be at least 18 percent and reduction of area at least 35 percent.

NOTE 1: Upon approval, the ratio of elastic limit to ultimate strength may be raised to permit use of special alloy steels of definite composition that will give equal or better physical properties than steels herein specified.

§ 78.277–6 *Openings in tanks.* (a) Each end must be closed by a cover made of forged steel. Covers must be secured to ends of tank by through bolts or studs not entering interior of tank. Covers must be of a thickness sufficient to meet test requirements of § 78.277–10 and to compensate for the openings closed by attachments prescribed herein.

(1) It is also provided that each end may be closed by internal threading to accommodate an approved fitting. The internal threads as well as the threads on fittings for these openings shall be clean cut, even, without checks, and tapped to gauge. Taper threads are required and must be of a length not less than as specified for American Standard Taper pipe threads. External threading of an approved type shall be permissible on the internal threaded ends.

(b) Joints between covers and ends and between cover and attachments must be of approved form and made tight against vapor or liquid leakage by means of a confined gasket of suitable material.

§ 78.277–7 *Tank mounting.* (a) The manner in which tanks are supported on and securely attached to car structure must be approved.

§ 78.277–8 *Protective housing.* (a) Safety devices, and loading and unloading valves on tanks must be protected from accidental injury by approved metal housing, arranged so it may be readily opened to permit inspection and adjustment of safety devices and valves, and securely locked in closed position. Housing must be provided with opening having an opening equal to twice the total discharge area of safety device enclosed.

§ 78.277–9 *Loading and unloading valves.* (a) Loading and unloading valve or valves must be mounted on the cover or threaded into the marked end of tank. These valves must be of approved type, made of metal not subject to rapid deterioration by lading or in service, and must withstand without leakage a pressure equal to the marked test pressure of tank. Provision must be made for closing service outlet of valves.

§ 78.277–10 *Safety devices.* (a) Tank must be equipped with one or more safety devices of approved type and discharge area, mounted on the cover or threaded into the non-marked end of the tank. If fittings are mounted on a cover, they must be of the flanged type, made of metal not subject to rapid de-

terioration by lading or in service. Total discharge capacity must be such that, with tank filled with air at pressure equal to 70 percent of the marked test pressure of tank, discharge capacity will be sufficient to reduce air pressure to 30 percent of the marked test pressure within 3 minutes after safety device opens.

(b) Safety devices must open at pressure not exceeding the marked test pressure of tank and not less than 7/10 of marked test pressure. (For tolerance for safety relief valves, see § 78.277–14 (a).)

(c) Cars used for the transportation of flammable gases must have the safety devices equipped with an approved ignition device.

§ 78.277–11 *Fixtures.* (a) Attachments, other than those mounted on tank covers or serving as threaded closures for the ends of the tank, are prohibited.

§ 78.277–12 *Tests of tanks.* (a) After heat-treatment, tanks must be subjected to hydrostatic tests in a water jacket, or by other accurate method, operated so as to obtain reliable data. No tank shall have been subjected previously to internal pressure greater than 90 percent of the marked test pressure. Each tank must be tested to a pressure at least equal to the marked test pressure of the tank. Pressure must be maintained for 30 seconds, and sufficiently longer to insure complete expansion of tank. Pressure gauge must permit reading to accuracy of one percent. Expansion gauge must permit reading of total expansion to accuracy of one percent. Expansion must be recorded in cubic centimeters.

(b) Permanent volumetric expansion must not exceed 10 percent of the total volumetric expansion at test pressure.

§ 78.277–13 *Handling of tanks failing in tests.* (a) Tanks rejected for failure in any of the tests prescribed may be reheat-treated, and will be acceptable if subsequent to reheat-treatment they are subjected to and pass all of the tests.

§ 78.277–14 *Tests of safety devices.* (a) Safety relief valves must be tested by air or gas before being put into service. Valve must open at pressure not exceeding the marked test pressure of tank and must be vapor-tight at 80 percent of the marked test pressure. These limiting pressures must not be affected by any auxiliary closure or other combination.

(b) For safety devices of frangible disc type, samples of discs used must burst at a pressure not exceeding the marked test pressure of tank and not less than 7/10 of marked test pressure.

§ 78.277–15 *Alterations and maintenance of tanks.* (a) All prescribed markings on tanks must be kept legible. Markings must not be added to or changed, except as follows:

(1) By application of additional marks not affecting the marked test pressure or water capacity; these marks must not obliterate prescribed marks previously applied.

(2) By application of test pressure marks, or alteration of such marks, to indicate reduced marked test pressure; authorized only for tanks that have not failed in 5-year test.

(3) By change of serial numbers or ownership marks, or both, in which case report, in sufficient detail so that previous serial number and ownership mark can be determined for each tank, and arranged by lot numbers or by consecutive serial numbers, must be filed with the Bureau of Explosives.

§ 78.277–16 *Marking.* (a) Each tank must be plainly and permanently marked, thus certifying that tank complies with all requirements of this specification. These marks must be stamped into the metal of necked-down section of tank at marked end, in letters and figures at least ¼ inch high, as follows:

(1) ICC–107A * * *, the * * * to be replaced by figures indicating marked test pressure of the tank. This pressure must not exceed the calculated maximum marked test pressure permitted, as determined by the formula in § 78.277–2 (b).

(2) Serial number immediately below the stamped mark specified in subparagraph (1) of this paragraph.

(3) Inspector's official mark immediately below the stamped mark specified in subparagraph (2) of this paragraph.

(4) Name, mark (other than trademark), or initials of company or person for whose use tank is being made, which must be recorded with the Bureau of Explosives.

(5) Date (such as 1–54, for January 1954) of tank test, so placed that dates of subsequent tests may easily be added thereto.

(6) Date (such as 1–54, for January 1954) of latest test of safety relief valve or of frangible disc, required only when tank is used for transportation of flammable gases.

(7) Name of gas for which tank car is being used, stenciled in letters at least 2 inches high on each side of car where they are clearly visible.

§ 78.277–17 *Inspection and reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in proper form certifying that tanks and their equipment comply with all the requirements of this specification and including information as to serial numbers, dates of tests, and ownership marks on tanks mounted on car structure. In case of alterations or additions to tanks or equipment from original design and construction, there must be furnished to the same parties a report in detail of the alterations or additions made to each tank covered by a particular application, showing the serial number of each tank involved.

(b) Purchaser of tanks must provide for inspection by a competent inspector as follows:

(1) Inspector must carefully inspect all material and reject that not complying with § 78.277–3.

(2) Inspector must stamp his official mark on each forging or seamless tube accepted by him for use in making tanks, and must verify proper application of heat number to such material by occasional inspections at steel manufacturer's plant.

(3) Inspector must obtain certified chemical analysis of each heat of material.

(4) Inspector must make inspection of inside surface of tanks before necking down, to insure that no seams, cracks, laminations, or other defects exist.

(5) Inspector must fully verify compliance with specification, verify heat treatment of tank as proper; obtain samples for all tests and check chemical analyses; witness all tests; and report minimum thickness of tank wall, maximum inside diameter, and calculated value of D, for each end of each tank as prescribed in § 78.277–2 (c).

(6) Inspector must stamp his official mark on each accepted tank immediately below serial number, and make certified report (See paragraph (c) of this section) to builder, to company or person for whose use tanks are being made, to builder of car structure on which tanks are to be mounted, to the Bureau of Explosives, and to the Secretary, Mechanical Division, Association of American Railroads.

(c) Inspector's report required herein must be in the following form:

(Place) _____
(Date) _____

STEEL TANKS

It is hereby certified that drawings were submitted for these tanks under A. A. R. Application for Approval _____ and approved by the A. A. R. Committee on Tank Cars under date of _____
Built for _____ Company
Location at _____
Built by _____ Company
Location at _____
Consigned to _____
Location at _____
Quantity _____
Length (inches) _____
Outside diameter (inches) _____

Marks stamped into tank as required in § 78.277–16 are:

ICC–107A ***

NOTE: The marked test pressure substituted for the * * * on each tank is shown on Record of General Data on Tanks attached hereto.

Serial numbers _____ to _____ inclusive
Inspector's mark _____
Owner's mark _____
Test date _____
Water capacity (see Record of Hydrostatic Tests).
Tare weights (yes or no) (see Record of Hydrostatic Tests). These tanks were made by process of _____
_____
_____

Steel used was identified as indicated by the attached list showing the serial number of each tank, followed by the heat number.

Steel used was verified as to chemical analysis and record thereof is attached hereto. Heat numbers were stamped into metal.

All material was inspected and each tank was inspected both before and after closing in ends; all material accepted was found free from seams, cracks, laminations, and other defects which might prove injurious to strength of tank. Processes of manufacture and heat-treatment of tanks were witnessed and found to be efficient and satisfactory.

Before necking down ends, each tank was measured at each location prescribed in § 78.277–2 (c) and minimum wall thickness

in inches at each location was recorded; maximum inside diameter in inches at each location was recorded; value of D in inches at each location was calculated and recorded; maximum fiber stress in wall at location showing larger value for

$$\frac{D^2+d^2}{D^2-d^2}$$

was calculated for 7/10 the marked test pressure and recorded. Calculations were made by the formula:

$$S=0.7P\frac{(D^2+d^2)}{(D^2-d^2)}$$

Hydrostatic tests, tensile tests of material, and other tests as prescribed in this specification, were made in the presence of the inspector, and all material and tanks accepted were found to be in compliance with the requirements of this specification. Records thereof are attached hereto.

I hereby certify that all of these tanks proved satisfactory in every way and comply with the requirements of Interstate Commerce Commission Specification No. 107A

* * *

(Signed) _____
(Inspector)

(Place) _____
(Date) _____

RECORD OF CHEMICAL ANALYSIS OF STEEL FOR TANKS

Numbered _____ to _____ inclusive
Size _____ inches outside diameter by _____ inches long
Built by _____ Company.
For _____ Company.

Heat No.	Tanks represented (Serial Nos.)	Chemical analysis							
		C	Mn	P	S	Si	Ni	Cr	Mo

These analyses were made by:

(Signed) _____
(Inspector)

(Place) _____
(Date) _____

RECORD OF TENSILE TESTS OF MATERIAL IN TANKS

Numbered _____ to _____ inclusive
Size _____ inches outside by _____ inches long
Built by _____ Company
For _____ Company

Heat No.	Tanks represented by test (Serial Nos.)	Elastic limit (pounds per square inch)	Tensile strength (pounds per square inch)	Elongation (percent in 2 inches)	Reduction of area (percent)

(Signed) _____

(Place) _____
(Date) _____

RECORD OF HYDROSTATIC TESTS ON TANKS

Numbered _____ to _____ inclusive
Size _____ inches outside by _____ inches long
Built by _____ Company
For _____ Company

Serial Nos. of tanks tested	Actual test pressure (pounds per square inch)	Total expansion (cc.)[1]	Permanent expansion (cc.)[1]	Percent ratio of permanent expansion to total expansion	Tare weight pounds[2]	Capacity in pounds of water at 60° F.

[1] If tests are made by method involving measurement of amount of liquid forced into tank by test pressure, then the basic data on which calculations are made, such as pump factors, temperature of liquid, coefficient of compressibility of liquid, etc., must also be given.

[2] Do not include protective housing, but state whether with or without valves.

(Signed) _____

(Place) _____
(Date) _____

RECORD OF GENERAL DATA ON TANKS

Numbered _____ to _____ inclusive
Built by _____ Company
For _____ Company

Serial No. of tank	Data obtained as prescribed in § 78.277–2(c)						$\frac{D^2+d^2}{D^2-d^2}$	(S) Calculated fiber stress in pounds per square inch at 7/10 marked test pressure	Marked test pressure in pounds per square inch stamped in tank	Minimum tensile strength of material in pounds per square in. recorded
	Marked end of tank			Other end of tank						
	(t) Minimum thickness of wall in inches	(d) Maximum inside diameter in inches	(D) Calculated value of D in inches $=d+2t$	(t) Minimum thickness of wall in inches	(d) Maximum inside diameter in inches	(D) Calculated value of D in inches $=d+2t$	Larger value of the factor			

(Signed) _____

22. Cancel entire § 78.278 (15 F. R. 8503, 8504, Dec. 2, 1950) (49 CFR 78.278, 1950 Rev.)

23. Cancel entire § 78.279 (15 F. R. 8504, Dec. 2, 1950) (49 CFR 78.279, 1950 Rev.)

24. Amend entire § 78.280 (20 F. R. 8111, Oct. 28, 1955) (19 F. R. 3263, 3264, June 3, 1954) (18 F. R. 5278, Sept. 1, 1953) (18 F. R. 806, Feb. 7, 1953) (17 F. R. 9841, Nov. 1, 1952) (17 F. R. 7287, Aug. 9, 1952) (16 F. R. 11783, 11784, Nov. 21, 1951) (15 F. R. 8504 to 8509, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.280) to read as follows:

§ 78.280 *Specification ICC–103–W; fusion-welded steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.280–1 *Type.* (a) Tanks built under this specification must be cylindrical, with heads designed convex outward, and have at least one expansion dome with manway, and such other external projections as are prescribed herein. When the interior of the tank is divided into compartments, each compartment must have two heads designed convex outward, one expansion dome with manway, and such other external projections as are prescribed herein.

§ 78.280–2 *Lagging.* (a) Not a specification requirement. If applied, the tank shell and expansion dome must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than 1/8 inch in thickness and efficiently flashed around all openings so as to be weather-tight. When heater systems are attached to exterior of tank, the lagging over each heater element may be reduced in thickness.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.280–3 *Bursting pressure.* (a) the calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint, must be at least 240 pounds per square inch.

§ 78.280–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula, but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal welded joint = 90 percent.

(1) The thickness of a dished head must be determined by the following formula, but in no case be less than that specified in paragraph (b) of this section:

$$t = \frac{5PL}{6SE}$$

where

t = thickness of plate in inches;
P = calculated bursting pressure pounds per square inch;
L = main inside radius to which head is dished measured on concave side in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of welded joint.

When head is formed from one piece, the efficiency may be considered as 100 percent.

(b) The minimum thickness of plates must be as follows:

Inside diameter of tanks	Bottom sheets	Shell sheets	Expansion dome sheets	Tank heads	Expansion dome heads	Interior compartment heads
	Inch	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
60 inches or under	7/16	1/4	5/16	1/2	5/16	5/16
Over 60 to 78 inches	7/16	5/16	5/16	1/2	5/16	5/16
Over 78 to 96 inches	1/2	3/8	5/16	1/2	5/16	3/8
Over 96 to 112 inches	1/2	7/16	5/16	9/16	5/16	7/16
Over 112 to 122 inches	1/2	1/2	5/16	5/8	5/16	1/2

(c) The minimum thickness of clad plates, where cladding material has physical properties at least equal to that of the base plate prescribed in § 78.280–5 (a), must be as prescribed in the above table. Where the cladding material does not have physical properties at least equal to that of the base plate prescribed in § 78.280–5 (a), minimum thickness of base plate must be as prescribed in the above table.

(d) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal welded joint, including welds, above the cradle.

(e) For tanks built of one piece cylindrical sections, the thickness specified for bottom sheet must apply to the entire cylindrical shell.

(f) For tanks without underframe the minimum thickness of bottom sheet must not be less than 5/8 inch.

(g) When tank is divided into compartments the interior head must comply with the requirements for interior compartment heads prescribed herein. When capacity of tank is reduced by moving in the exterior head a new exterior head of approved contour not less than 3/8 inch thickness must be applied. When the capacity is reduced by the insertion of a new interior head this head must comply with the requirements for interior compartment heads and the exterior head reapplied. Voids, created by the addition of heads for division into compartments or reduction in capacity, must be provided with a tapped drain hole at their lowest point, and a tapped hole at top of tank. The top hole must be closed, and the bottom hole may be closed, with not less than 3/4 inch nor more than 1 1/2 inch solid pipe plugs having standard pipe threads.

§ 78.280–5 *Material.* (a) All plates for tank and expansion dome must be made of open-hearth boiler-plate flange quality steel to an approved specification, the carbon content of which shall not exceed 0.31 percent. These plates may also be clad with other metals, such as nickel.

(b) All castings used for fittings or attachments to tank must be made of material to an approved specification.

(c) Rivets, if used, must be of the same quality as used for steam boilers and other pressure vessels, and be made of steel to an approved specification. When clad plates are used and attachments are riveted, the rivet heads inside the tank must be clad with the same material, or, rivets may be of the same material as the cladding, provided rivets have physical properties at least equivalent to rivets prescribed herein.

(d) All external projections must be made of materials specified herein.

(e) Lining or interior coating is not a specification requirement. If applied, it must be approved as to material.

§ 78.280–6 *Tank heads.* (a) Tank heads must be of approved contour and must be designed for pressure on concave side and to main inside radius not exceeding 10 feet. The inside knuckle radius must not be less than 3 3/4 inches except for interior heads of compartment tanks the knuckle radius must not be less than 1 1/2 inches.

§ 78.280–7 *Welding.* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion welding to be performed by fabricators certified by the Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion welding in accordance with the requirements of AAR Welding Code Appendix W.

§ 78.280–8 *Manway ring, safety valve flange, and bottom outlet nozzle flange or other attachments.* (a) These attachments may be riveted or fusion welded. Riveted joints must be made metal to metal without interposition of other material. Rivets, if used, must be driven hot and calked inside. For computing rivet areas the effective diameter of a driven rivet is the diameter of its reamed hole, which hole must in no case exceed nominal diameter of rivet by more than 1/16 inch. Use of rivets of less than 5/8 inch nominal diameter prohibited. Fusion-welding for securing these attachments in place must be of double-welded butt joint type or double full-fillet lap joint type.

(b) *Calking.* All attachments riveted to the tank must have the rivets calked, and the joints formed by the attachments, calked on the inside of tank.

§ 78.280–9 *Stress-relieving.* (a) All welding of the tank shell and of attachments welded directly thereto must be stress relieved as a unit.

§ 78.280–10 *Tank mounting.* (a) The manner in which the tank is supported on and securely attached to the car structure must be approved.

§ 78.280–11 *Anchor rivets.* (a) If used, they may have their heads on the inside of the tank shell covered and protected from the lading by a liquid-tight housing of approved design. The lower portion of the housing must be fusion-welded to, and stress-relieved with the tank shell as a unit. After the rivets have been driven and calked, the top portion of the housing must be secured to the top of the lower portion by an approved method of welding, which welding need not be stress-relieved. A hole must be provided through tank shell, under each housing, to permit making air pressure test. Each test hole must be tightly closed after completion of test with an approved plug.

§ 78.280–12 *Expansion dome.* (a) The expansion dome must have a capacity measured from the inside top of shell of tank to the inside top of dome or bottom of any vent pipe projecting inside of dome, of at least 2 per cent of the total capacity of the tank and dome combined, except that when safety valve or safety vent is applied to side of dome, the effective capacity of dome must be measured from top of safety valve or safety vent opening in the side of dome to inside top of shell of tank.

(b) The opening in the manway ring must be at least 16 inches in diameter. The opening in the tank shell within the dome must be at least 29 inches in diameter. When the opening in the tank shell exceeds 30 inches in diameter, the opening must be reinforced in an approved manner. When the opening in the tank shell is less than the inside diameter of the dome, and the dome pocket is not closed off in an approved manner, dome pocket drain holes must be provided in the tank shell with nipples projecting inside the tank at least 1 inch.

(c) The dome head must be of approved contour and designed for pressure on concave side.

§ 78.280–13 *Closures for manways.* (a) The manway cover must be of approved type and designed to make it impossible to remove the cover while the interior of the tank is subjected to pressure.

(b) Manway covers must be made of cast, forged or fabricated steel, malleable iron or other malleable metals. Manway rings, if riveted to dome of tank, must be made of cast, forged or fabricated steel, malleable iron or other malleable metals. Manway rings, if welded to dome of tanks, must be made

of cast, forged or fabricated steel and be of good weldable quality in conjunction with metal of dome.

(c) All covers not hinged must be attached to outside of dome head by at least ⅜ inch chain or its equivalent.

(d) All joints between manway covers and their seats must be made tight against leakage of vapor and liquid by use of gaskets of suitable material.

§ 78.280–14 *Gauging, bottom outlet valve operating rod, venting, loading and unloading, and air inlet devices extending through dome of tank.* (a) Not specification requirements. When installed these devices including their valves and fittings must be of approved design, made of materials not subject to rapid deterioration by the lading. These devices including their valves must be provided with a protective housing. Unloading pipe must be securely anchored within the tank. Provision must be made for closing pipe connections of valves.

§ 78.280–15 *Bottom outlets.* (a) The bottom outlet, when installed, must be made of metal not subject to rapid deterioration by the lading, be of approved construction, and be provided with a valve at its upper end and a liquid tight closure at its lower end.

(b) The valve operating mechanism and outlet nozzle construction must be such as to insure against unseating of valve due to stresses or shocks incident to transportation.

(c) Bottom outlet nozzle may be cast, fabricated or forged metal. If outlet nozzle is welded to tank, it must be of cast, forged or fabricated metal and be of good weldable quality in conjunction with metal of tank.

(d) To provide for the attachment of standard unloading connections, the bottom of the main portion of the outlet nozzle or some fixed attachment thereto, must have external Unified Form Threads, 4 threads to the inch.

(e) For outlet nozzles that extend 6 inches or more from shell of tank a "V" groove must be cut (not cast) in the upper part of outlet nozzle at a point immediately below lowest part of valve to a depth that will leave thickness of nozzle wall at the root of the "V" not over ⅜ inch. In the case of steam-jacketed outlet nozzles this groove must be below the steam chamber but above the bottom of center sill construction. Where outlet nozzle is not a single piece, arrangement must be made to provide the equivalent of the breakage groove.

(f) The flange on the outlet nozzle must be of a thickness which will prevent distortion of the valve seat or valve by any change in contour of the shell resulting from expansion of lading, or other causes, and which will insure that accidental breakage of the outlet nozzle will occur at or below the "V" groove.

(g) The valve must have no wings or stem projecting below the "V" groove in the outlet nozzle. The valve and seat must be readily accessible or removeable for repairs, including grinding.

(h) The valve operating mechanism must have means for compensating for variation in the vertical diameter of the tank produced by expansion, weight of the liquid contents, or other causes, and should operate from the interior of the tank, but in the event the rod is carried through the dome, leakage must be prevented by packing in stuffing box and cap nut.

(i) In no case must extreme projection of bottom outlet equipment extend to within 12 inches above top of rail. All bottom outlet reducers and closures and their attachments must be secured to car by at least ⅜ inch chain or its equivalent, except that outlet closure plugs may be attached by ¼ inch chain. When the bottom outlet closure is of the combination cap and valve type, the pipe connection to the valve must be closed by a plug or cap.

§ 78.280–16 *Safety valves.* (a) The tank must be equipped with one or more safety valves of approved design mounted on expansion dome. Total valve discharge capacity must be sufficient to prevent building up of pressure in the tank in excess of 45 pounds per square inch.

(b) One safety valve must be provided for each tank, or compartment thereof, of 6,650 gallons capacity or less, and two safety valves for each tank, or compartment thereof, of over 6,650 gallons capacity.

(c) Each safety valve must be set to open at a pressure of 35 pounds per square inch and be vapor tight at 28 pounds per square inch. (For tolerance see § 78.280–21 (a).)

(d) Tanks used for the transportation of corrosive liquids, flammable solids, oxidizing materials, or poisonous liquids or solids, class B, need not be equipped with safety valves, but if not so equipped must have 1 safety vent at least 1¾ inches inside diameter closed with a frangible disc of lead or other suitable material of a thickness that will rupture at not more than 45 pounds per square inch. Means for holding disc in place must be such as to prevent distortion or damage to disc when applied. Safety vent closure must be chained or otherwise fastened to prevent misplacement. All tanks equipped with vents must be stenciled "Not for Flammable Liquids."

(e) Safety valve or safety vent flanges, if welded to dome, must be of cast, forged or fabricated metal, and be of good weldable quality in conjunction with metal of dome.

§ 78.280–17 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) All attachments to tank and dome must be applied by approved means. When attachments are riveted the edges of plates must be beveled so that the angle of the calking edge will be between 60 and 70 degrees with the flat surface of the attachment. The extreme calking edge distance, measured from center line of rivet hole, must be at least one and one-half times the diameter of the hole and not more than that distance plus ¼ inch. The joints formed by attachment of all riveted external projections must be calked on the inside. All rivet heads on the inside and outside of tank and dome must be calked. Split calking is prohibited. Interior heater systems when installed, must be so constructed that the breaking off of their external connections will not cause leakage of contents of tank.

§ 78.280–18 *Interior heater systems.* (a) See §§ 78.260 and 78.261, heater systems.

(b) Interior heater systems and plug flanges, if welded to tank or dome, must be of cast, forged or fabricated metal, and be of good weldable quality in conjunction with metal of tank or dome.

§ 78.280–19 *Closures for openings.* (a) All plugs must be solid, of good grade cast iron or equivalent, of standard pipe thread of a length which will screw at least 6 threads inside the face of fitting or tank. Plugs when inserted from the outside of tank must have the letter "S" at least ⅜ inch in size stamped with steel-stamp or cast in the outside surface to indicate the plug is solid.

§ 78.280–20 *Tests of tanks.* (a) Each tank must be tested, before being put into service, by completely filling the tank and dome with water, or other liquid having similar viscosity, of a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 60 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All rivets and closures, except safety valves or safety vents, must be in place while test is made.

(b) If tanks are to be lagged, the test of the tank must be made before lagging is applied.

(c) Calking of welded joints to stop leaks developed during the foregoing tests is prohibited. Repairs in welded joints must be made as prescribed in § 78.280–7 (a).

(d) Test of interior heater systems. Before interior heater systems are placed in service they must be tested with hydrostatic pressure and must be tight at 200 pounds per square inch.

(e) Anchor rivet housing test. After anchor rivet housings, if applied, are in place these housings must be tested by applying an air pressure of 100 pounds per square inch through openings in tank shell and must be tight against leakage.

§ 78.280–21 *Test of safety valves.* (a) Each valve must be tested, before being put into service, by attaching to an air line and applying pressure. The valve must not leak below 28 pounds pressure. The valve must open at the pressure prescribed in § 78.280–16 (c), with a tolerance of plus or minus 3 pounds.

§ 78.280–22 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–103–W in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. This mark must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and

figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

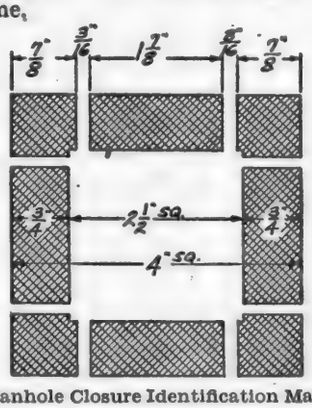
(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, such as application of riveted anchors, etc., in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph by the party assembling the completed car. These marks must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(6) Date on which interior heater systems were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(7) Identification mark, illustrated herein, for approved manway closure must be stenciled on each side of dome, or jacket if lagged, in line with the ladders and in a color contrasting to color of dome.



Manhole Closure Identification Mark
(Reduced size)

(8) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity, the name of that commodity followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the tank, or jacket if lagged, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

(9) Tanks made of clad plates must be stenciled on the tank, or jacket if lagged, (naming material) _____ clad tank. Lined tanks must be stenciled on the tank, or jacket if lagged, (naming material) _____ lined tank. These marks must be in letters at least 2 inches high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.280–23 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

25. Amend entire § 78.281 (19 F. R. 3264, June 3, 1954) (15 F. R. 8509, 8510, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.281) to read as follows:

§ 78.281 *Specification ICC–103A–W; fusion-welded steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.281–1 *Type.* (a) Tanks built under this specification must be cylindrical, with heads designed convex outward, and must have at least 1 expansion dome with manway, and such other external projections as are prescribed herein. When the interior of the tank is divided into compartments, each compartment must have 2 heads designed convex outward, 1 expansion dome with manway, and such other external projections as are prescribed herein.

§ 78.281–2 *Lagging.* (a) Not a specification requirement. If applied, the tank shell and expansion dome must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to the exterior of tank, the lagging over each heater element may be reduced in thickness.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.281–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint, must be at least 240 pounds per square inch.

§ 78.281–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal welded joint = 90 percent.

(1) The thickness of a dished head must be determined by the following formula, but in no case be less than that specified in paragraph (b) of this section:

$$t=\frac{5PL}{6SE}$$

where

t = thickness of plate in inches;
P = calculated bursting pressure pounds per square inch;
L = main inside radius to which head is dished measured on concave side in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of welded joint.

When head is formed from one piece, the efficiency may be considered as 100 percent.

(b) The minimum thickness of plates must be as follows:

Inside diameter of tanks	Bottom sheets	Shell sheets	Expansion dome sheets	Tank heads	Expansion dome heads	Interior compartment heads
	Inch	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
60 inches or under	7/16	1/4	5/16	1/2	5/16	5/16
Over 60 to 78 inches	7/16	5/16	5/16	1/2	5/16	5/16
Over 78 to 96 inches	1/2	3/8	5/16	1/2	5/16	3/8
Over 96 to 112 inches	1/2	7/16	5/16	9/16	5/16	7/16
Over 112 to 122 inches	1/2	1/2	5/16	5/8	5/16	1/2

(c) The minimum thickness of clad plates, where cladding material has physical properties at least equal to that of the base plate prescribed in § 78.281–5 (a) must be as prescribed in the above table. Where the cladding material does not have physical properties at least equal to that of the base plate prescribed in § 78.281–5 (a), minimum thickness of base plate must be as prescribed in the above table.

(d) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal welded joint, including welds, above the cradle.

(e) For tanks built of one piece cylindrical sections, the thickness specified for bottom sheet must apply to the entire cylindrical shell.

(f) When tank is divided into compartments the interior head must comply with the requirements for interior compartment heads prescribed herein. When capacity of tank is reduced by moving in the exterior head a new ex-

terior head of approved contour not less than ⅜ inch thickness must be applied. When the capacity is reduced by the insertion of a new interior head this head must comply with the requirements for interior compartment heads and the exterior head reapplied. Voids, created by the addition of heads for division into compartments or reduction in capacity, must be provided with a tapped drain hole at their lowest point, and a tapped hole at top of tank. The top hole must be closed, and the bottom hole may be closed, with not less than ¾ inch nor more than 1½ inch solid pipe plugs having standard pipe threads.

§ 78.281–5 *Material.* (a) All plates for tank and expansion dome must be made of open-hearth boiler-plate flange-quality steel to an approved specification. The carbon content of which shall not exceed 0.31 percent. These plates may also be clad with other metals, such as nickel.

(b) All castings used for fittings or attachments to tank must be made of material to an approved specification.

(c) Rivets, if used, must be of the same quality as used for steam boilers and other pressure vessels and be made of steel to an approved specification. When clad plates are used and attachments are riveted, the rivet heads inside the tank must be clad with the same material, or, rivets may be of the same material as the cladding, provided rivets have physical properties at least equivalent to rivets prescribed herein.

(d) All external projections must be made of materials specified herein.

(e) Lining or interior coating is not a specification requirement. If applied, it must be approved as to material.

§ 78.281–6 *Tank heads.* (a) Tanks heads must be of an approved contour and must be designed for pressure on concave side and to main inside radius not exceeding 10 feet. The inside knuckle radius must not be less than 3¾ inches except for interior heads of compartment tanks the knuckle radius must be less than 1½ inches.

§ 78.281–7 *Welding.* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with the requirements of A. A. R. Welding Code Appendix W.

§ 78.281–8 *Manway rings, safety vent flange, and bottom washout nozzle flange or other attachments.* (a) These attachments may be riveted or fusion-welded. Riveted joints must be made metal to metal without interposition of other materials. Rivets, if used, must be driven hot and calked inside. For computing rivet areas the effective diameter of a driven rivet is the diameter of its reamed hole, which hole must in no case exceed nominal diameter of rivet by more than 1/16 inch. Use of rivets of less than ⅝ inch nominal diameter prohibited. Fusion welding for securing these attachments in place must be of the double-welded butt-joint type or double-full-fillet-lap joint type.

(b) *Calking.* All attachments riveted to the tank must have the rivets calked, and the joints formed by the attachments, calked on the inside of tank.

§ 78.281–9 *Stress relieving.* (a) All welding of the tank shell and of attachments welded directly thereto must be stress-relieved as a unit.

§ 78.281–10 *Tank mounting.* (a) The manner in which the tank is supported on and securely attached to the car structure must be approved.

§ 78.281–11 *Anchor rivets.* (a) If used, they may have their heads on the inside of the tank shell covered and protected from the lading by a liquid-tight housing of approved design. The lower portion of the housing must be fusion-welded to, and stress-relieved with, the tank shell as a unit. After the rivets have been driven and calked, the top portion of the housing must be secured to the top of the lower portion by an approved method of welding, which welding need not be stress-relieved. A hole must be provided through tank shell, under each housing to permit making air pressure test. Each test hole must be tightly closed after completion of test with an approved plug.

§ 78.281–12 *Expansion dome.* (a) The expansion dome must have a capacity measured from the inside top of shell of tank to the inside top of dome or bottom of any vent pipe projecting inside of dome, of at least 1 per cent of the total capacity of the tank and dome combined, except that when safety vent is applied to side of dome, the effective capacity of dome must be measured from top of safety vent opening in the side of dome to inside top of shell of tank.

(b) The opening in the manway ring must be at least 16 inches in diameter. The opening in the tank shell within the dome must be at least 29 inches in diameter. When the opening in the tank shell exceeds 30 inches in diameter, the opening must be reinforced in an approved manner. When the opening in the tank shell is less than the inside diameter of the dome, and the dome pocket is not closed off in an approved manner, dome pocket drain holes must be provided in the tank shell with nipples projecting inside the tank at least 1 inch.

(c) The dome head must be of approved contour and must be designed for pressure on concave side.

§ 78.281–13 *Closures for manway.* (a) The manway cover must be of bolted type, bolted and hinged type, or other approved types, and designed to provide a secure closure of the manway.

(b) Manway covers must be made of cast, forged or fabricated steel, malleable iron or other malleable metals. Manway rings, if riveted to dome of tank, must be made of cast, forged or fabricated steel, malleable iron or other malleable metals. Manway rings, if welded to dome of tank, must be made of cast, forged or fabricated steel and be of good weldable quality in conjunction with the metal of the dome.

(c) Chains, if used to attach manway covers to outside of dome head, must be at least ⅜ inch or its equivalent.

(d) All joints between manway covers and their seats must be made tight against leakage of vapor and liquid by use of gaskets of suitable material.

§ 78.281–14 *Gauging, venting, loading and unloading, and air inlet devices extending through domes of tanks.* (a) Not specification requirements. When installed these devices must be of an approved design, made of material not subject to rapid deterioration by the lading, and be tightly closed. Protective housing not required, except as prescribed in paragraph (b) of this section. Unloading pipe must be securely anchored within the tank.

(b) When the characteristics of the commodity for which the car is authorized are such that these devices must be equipped with valves to provide for the loading and unloading of the contents, these devices including valves must be of an approved design and be provided with a protective housing. Provision must be made for closing pipe connections of valves.

§ 78.281–15 *Bottom outlets.* (a) Bottom outlet is prohibited, but tank may be equipped with a bottom washout nozzle of metal not subject to rapid deterioration by the lading, which must be of approved construction complying with the following requirements:

(b) The construction and closure of the bottom washout nozzle must be such that it is liquid tight and should the nozzle be broken, loss of contents will not occur.

(c) The extreme projection of the bottom washout nozzle must be at least 12 inches above the top of rail.

(d) Bottom washout nozzle may be of cast, fabricated, or forged metal. If welded to tank, it must be of good weldable quality in conjunction with metal of tank.

(e) The closure of the washout nozzle must be equipped with a ¾ inch solid screw plug. Plug must be secured to car structure or washout chamber by at least a ¼ inch chain.

(f) For bottom washout nozzles that project 6 inches or more from shell of tank, a "V" groove must be cut (not cast) in the upper part of bottom washout nozzle at a point immediately below lowest part of inside closure seat to a depth that will leave thickness of nozzle wall at the root of the "V" not over ⅜ inch. Where bottom washout nozzle is not a single piece, arrangement must be made to provide the equivalent of the breakage groove.

(g) The flange on the bottom washout nozzle must be of a thickness which will prevent distortion of the inside closure seat or closure casting by any change in contour of the shell, resulting from expansion of lading, or other causes, and which will insure that accidental breakage of the washout nozzle will occur at or below the "V" groove.

(h) The closure casting must not project below the "V" groove in the washout nozzle. The closure casting and seat

must be readily accessible for repairs, including grinding.

§ 78.281–16 *Safety vents.* (a) Safety valves are prohibited, but a safety vent must be applied.

(b) Each tank or compartment thereof must be equipped with 1 safety vent at least 1¾ inches inside diameter closed with a frangible disc of lead or other suitable material of a thickness that will rupture at not more than 45 pounds per square inch. Means for holding disc in place must be such as to prevent distortion or damage to disc when applied. Safety vent closure must be chained or otherwise fastened to prevent misplacement.

(c) Safety vent flanges, if welded to dome, must be of cast, forged, or fabricated metal and be of good weldable quality in conjunction with metal of dome.

§ 78.281–17 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) All attachments to tank and dome must be applied by approved means. When attachments are riveted, the edges of plates must be beveled so that the angle of the calking edge will be between 60 and 70 degrees with the flat surface of the attachment. The extreme calking edge distance, measured from center line of rivet hole, must be at least 1½ times the diameter of the hole and not more than that distance plus ¼ inch. The joints formed by attachment of all riveted external projections must be calked on the inside. All rivet heads on the inside and outside of tank and dome must be calked. Split calking is prohibited. Interior heater systems when installed, must be so constructed that the breaking off of their external connections will not cause leakage of contents of tank.

§ 78.281–18 *Interior heater systems.* (a) See §§ 78.260 and 78.261, heater systems.

(b) Interior heater systems and plug flanges, if welded to tank or dome, must be of cast, forged or fabricated metal and be of good weldable quality in conjunction with metal of tank or dome.

§ 78.281–19 *Closures for openings.* (a) All plugs must be solid, of good grade cast iron or equivalent, with standard pipe threads of a length which will screw at least 6 threads inside the face of fitting or tank. Plugs, when inserted from the outside of tank heads, must have the letter "S" at least ⅜ inch in size stamped with steel stamp or cast on the outside surface to indicate the plug is solid.

§ 78.281–20 *Tests of tanks.* (a) Each tank must be tested before being put into service, by completely filling tank and dome with water, or other liquid having similar viscosity, of a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 60 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All rivets and closures, except safety valves or safety vents, must be in place while test is made.

(b) If tanks are to be lagged, the test of tank must be made before lagging is applied.

(c) Calking of welded joints to stop leaks developed during the foregoing tests prohibited. Repairs in welded joints must be as prescribed in § 78.281–7 (a).

(d) Test of interior heater systems: Before interior heater systems are placed in service they must be tested with hydrostatic pressure and be tight at 200 pounds per square inch.

(e) Anchor rivet housing test: After anchor rivet housings, if applied, are in place, these housings must be tested by applying a pressure of 60 pounds per square inch through openings in tank shell and must be tight against leakage.

§ 78.281–21 *Marking.* (a) Each tank must be marked thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–103A–W in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. This mark must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, such as application of riveted anchors, etc., in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph, by the party assembling the completed car. These marks must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(5) Date on which interior heater systems were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(6) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the tank, or jacket if lagged, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

(7) Tanks made of clad plates must be stenciled on the tank, or jacket if lagged, (naming material) _____ clad tank. Lined tanks must be stenciled on the tank, or jacket if lagged, (naming material) _____ lined tank. These marks must be in letters at least 2 inches high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.281–22 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish the car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of, or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

26. Amend entire § 78.282 (19 F. R. 3264, June 3, 1954) (18 F. R. 5278, Sept. 1, 1953) (15 F. R. 8510 to 8512, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.282) to read as follows:

§ 78.282 *Specification ICC–103B–W; rubber lined fusion-welded steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.282–1 *Type.* (a) Tanks built under this specification must be cylindrical, with heads designed convex outward, and must have at least one expansion dome with manway, and such other external projections as are prescribed herein. When the interior of the tank is divided into compartments, each compartment must have two heads designed convex outward, one expansion dome with manway, and such other external projections as are prescribed herein.

§ 78.282–2 *Lagging.* (a) Not a specification requirement. If applied, the tank shell and expansion dome must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to exterior of tank, the lagging over each heater element may be reduced in thickness.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.282–3 *Bursting pressure.* (a) The calculated bursting pressure, based

on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint, must be at least 240 pounds per square inch.

§ 78.282–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula, but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t=\frac{Pd}{2SE}$$

where
t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal welded joint = 90 percent.

(1) The thickness of a dished head must be determined by the following formula, but in no case be less than that specified in paragraph (b) of this section:

$$t=\frac{5PL}{6SE}$$

where
t = thickness of plate in inches;
P = calculated bursting pressure pounds per square inch;
L = main inside radius to which head is dished measured on concave side in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of welded joint.

When head is formed from one piece the efficiency may be considered as 100 percent.

(b) The minimum thickness of plates must be as follows:

Inside diameter of tanks	Bottom sheets	Shell sheets	Expansion dome sheets	Tank heads	Expansion dome heads	Interior compartment heads
	Inch	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
60 inches or under	7/16	1/4	5/16	1/2	5/16	5/16
Over 60 to 78 inches	7/16	5/16	5/16	1/2	5/16	5/16
Over 78 to 96 inches	1/2	3/8	5/16	1/2	5/16	3/8
Over 96 to 112 inches	1/2	7/16	5/16	9/16	5/16	7/16
Over 112 to 122 inches	1/2	1/2	5/16	5/8	5/16	1/2

(c) Tank must be lined with rubber at least 5/32 inch thick, except over all rivets and seams formed by riveted attachments where the lining must be double thickness. The lining must overlap at least 1½ inches at all edges, which must be straight and be beveled to an angle of approximately 45 degrees. A rubber reinforcement pad at least 4½ feet square and at least ½ inch thick must be applied by vulcanizing to the lining on bottom of tank directly under the dome. The edges of pad must be beveled to an angle of approximately 45 degrees. An opening in this pad for sump is permitted. No rubber shall be under tension when applied except that due to conformation over rivet heads. Interior of tank must be free from scale, oxidation, moisture, and all foreign matter during the lining operations.

(d) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal welded joint, including welds, above the cradle.

(e) For tanks built of one piece cylindrical sections, the thickness specified for bottom sheet must apply to the entire cylindrical shell.

(f) When tank is divided into compartments the interior head must comply with the requirements for interior compartment heads prescribed herein. When capacity of tank is reduced by moving in the exterior head, a new exterior head of approved contour not less than 3/8 inch in thickness must be applied. When the capacity is reduced by the insertion of a new interior head, this head must comply with the requirements for interior compartment heads and the exterior head reapplied. Voids, created by the addition of heads for division into compartments or reduction in capacity, must be provided with a tapped drain-hole at their lowest point, and a tapped hole at top of tank. The top hole must be closed, and the bottom hole may be closed, with not less than 3/4 inch nor more than 1½ inch solid pipe plugs having standard pipe threads.

§ 78.282–5 *Material.* (a) All plates for tank and expansion dome must be made of open-hearth boiler-plate flange quality steel to an approved specification. The carbon content of which shall not exceed 0.31 percent.

(b) All castings used for fittings or attachments to tank must be made of material to an approved specification.

(c) Rivets, if used, must be of the same quality as used for steam boilers and other pressure vessels and be made of steel to an approved specification.

(d) Each tank or each compartment thereof, must be lined with acid resisting rubber, vulcanized or bonded directly or otherwise attached to the metal tank, to provide a non-porous laminated lining.

(e) All external projections must be made of materials specified herein.

§ 78.282–6 *Tank heads.* (a) Tank heads must be of approved contour and must be designed to pressure on concave side and to main inside radius not exceeding 10 feet. The inside knuckle radius must not be less than 3¾ inches, except for interior heads of compartment tanks the knuckle radius must not be less than 1½ inches.

§ 78.282–7 *Welding.* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with the requirements of A. A. R. welding code Appendix "W".

§ 78.282–8 *Manway ring, safety vent flange, and sump flange or other attachments.* (a) These attachments may be riveted or fusion-welded. Riveted joints must be made metal to metal without interposition of other material. Rivets, if used, must be driven hot and calked inside. For computing rivet areas, the effective diameter of a driven rivet is the diameter of its ream hole, which must in no case exceed nominal diameter of rivet by more than 1/16 inch. Use of rivets of less than 5/8 inch nominal diameter prohibited. Fusion-welding for securing attachments in place must be of the double-welded butt joint type or double full-fillet lap joint type. All rivet heads in inside of tank must be bottom-head or similar shape, of uniform size and the under surface of heads must be driven tight against shell. All plates, castings, and rivet heads on inside of tank must be calked. All projecting edges of plates, castings, and rivet heads on inside of tank must be rounded and free from fins or other irregular projections. Castings must be free from porosity.

(b) *Calking.* All attachments riveted to the tank must have the rivets calked, and the joints formed by the attachments calked on the inside of tank.

§ 78.282–9 *Stress relieving.* (a) All welding of the tank shell and of attachments welded directly thereto must be stress-relieved as a unit.

§ 78.282–10 *Tank mounting.* (a) The manner in which tank is supported on and securely attached to the car structure must be approved.

§ 78.282–11 *Expansion dome.* (a) The expansion dome must have a capacity, measured from the inside top of shell of tank to the inside top of dome or bottom of any vent pipe projecting inside dome, of at least 1 percent of total capacity of the tank and dome combined, except that when safety vent is applied to side of dome, the effective capacity of dome must be measured from top of safety vent opening in the side of dome to inside top of shell of tank.

(b) The opening for manway before lining, must be at least 18 inches in diameter. The opening in the tank shell within the dome must be at least 29 inches in diameter. When the opening in the tank shell exceeds 30 inches in diameter, the opening must be reinforced in an approved manner. When the opening in the tank shell is less than the inside diameter of the dome, and the dome pocket is not closed off in an approved manner, dome pocket drain holes must be provided in the tank shell with nipples projecting inside the tank at least 1 inch.

(c) The dome head must be of approved contour and must be designed for pressure on concave side.

§ 78.282–12 *Closures for manway.* (a) The manway cover must be of approved type and designed to provide a secure closure of the manway.

(b) Manway cover must be made of a suitable metal. The top, bottom, and edge of manway cover must be rubber covered as prescribed in §§ 78.282–4 (c) and 78.282–5 (d). Through bolt holes must be lined with rubber at least 1/8 inch in thickness. Cover made of metal not affected by the lading need not be rubber covered. All rubber surfaces on out-

side of tank or fittings must be protected with an age resisting coating. Manway flange, if riveted to dome of tank, must be of cast, forged or fabricated steel, malleable iron or other malleable metals. Manway flange, if welded to dome of tank, must be made of cast, forged or fabricated metal and be of good weldable quality in conjunction with metal of dome.

(c) Chains, if used to attach manway cover to outside of the dome head, must be at least ⅜ inch or its equivalent.

(d) All joints between manway cover and manway flange, and between manway cover and any appurtenances mounted thereon, must be made tight against leakage.

§ 78.282–13 *Gauging, venting, loading and unloading, and air inlet devices extending through domes of tanks.* (a) When installed, these devices must be of an approved design and must be tightly closed. Protective housing not required, except when the characteristics of the commodity for which the car is authorized are such that these devices must be equipped with valves to provide for the loading and unloading of the contents, these devices, including the valves, must be of an approved design and provided with a protective housing. Unloading pipes must be securely anchored within the tank.

(b) When gauging, venting, loading and unloading, and air inlet devices and their closures are made of material affected by the lading they must have all surfaces rubber covered as prescribed in § 78.282–4 (c) and § 78.282–5 (d). Interior pipes of these devices must be supported at their lower end.

§ 78.282–14 *Bottom outlets.* (a) Bottom outlet is prohibited. Bottom sump is permissible. If used and welded to tank it must be of cast, fabricated or forged metal of good weldable quality in conjunction with metal of tank.

§ 78.282–15 *Safety vents.* (a) Safety valves are prohibited, but a safety vent must be applied.

(b) Each tank, or each compartment thereof, must be equipped with one safety vent, lined with rubber of at least ⅛ inch thickness, having an inside diameter of at least 1¾ inches after lining, closed with a frangible disc of lead or other suitable material of a thickness that will rupture at not more than 45 pounds per square inch. Means for holding disc in place must be such to prevent distortion or damage to disc when applied. Safety vent closure must be chained or otherwise fastened to prevent misplacement.

(c) Safety vent flanges, if welded to dome, must be of cast, forged, or fabricated metal and be of good weldable quality in conjunction with metal of dome.

§ 78.282–16 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) All attachments to tank and dome must be applied by an approved means. When attachments are riveted the edges of plates must be beveled so that the angle of the calking edge will be between 60 and 70 degrees with the flat surface of the attachment. The extreme calking edge distance, measured from center line of rivet hole, must be at least one and one-half times the diameter of the hole and not more than that distance plus ¼ inch. The joints formed by attachments of all riveted external projections must be calked on the inside. Split calking prohibited. Interior heater systems, when installed, must be made of material not affected by the lading. They must be constructed so that the breaking off of their external connections will not cause leakage of contents of tanks. All surfaces of attachments exposed to the lading must be covered with rubber as prescribed in §§ 78.282–4 (c) and 78.282–5 (d). Attachments made of metal not affected by the lading need not be rubber covered.

§ 78.282–17 *Interior heater systems.* (a) See §§ 78.260 and 78.261, heater systems.

(b) Interior heater systems closure flanges, if welded to tank or dome, must be of cast, forged or fabricated metal and be of good weldable quality in conjunction with metal of tank or dome.

§ 78.282–18 *Closures for openings.* (a) Closures for openings must have all surfaces exposed to the lading rubber covered or be made of material not affected by the lading.

§ 78.282–19 *Tests of tanks.* (a) Each tank must be tested, before rubber lining is applied by completely filling tank and dome with water, or other liquid of similar viscosity, of a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 60 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All rivets and closures, except safety vents, must be in place while test is made. After tank is rubber lined, no further tests are required.

(b) If tanks are to be lagged, the test of tank must be made before lagging is applied.

(c) Calking of welded joints to stop leaks developed during the foregoing tests prohibited. Repairs in welded joints must be made as prescribed in § 78.282–7 (a).

(d) Tests of interior heater systems: Before interior heater systems are placed in service they must be tested with hydrostatic pressure and must be tight at 200 pounds per square inch.

§ 78.282–20 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–103B–W in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. This mark must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of orignal test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, such as application of riveted anchors, etc., in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped mark specified in subparagraph (2) of this paragraph by the party assembling the completed car. These marks must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) "Rubber-lined tank—pressure test not required," stenciled on tank, or jacket if lagged, instead of record of test of tank.

(5) Date on which interior heater systems were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(6) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the tank, or jacket if lagged, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.282–21 *Reports.* (a) Before a tank is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

(b) Before a tank car tank not originally built under this specification is lined with rubber, a report certifying that the tank and its equipment have been brought into compliance with the tank requirements of Specification ICC–103B–W must be furnished by car owner to the party who is to apply the rubber lining. A copy of this report in approved form certifying that tank has been lined in compliance with all requirements of this specification, must be furnished by party lining the tank to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads.

27. Amend entire § 78.283 (19 F. R. 3264, June 3, 1954) (18 F. R. 5278, Sept.

1, 1953) (16 F. R. 11784, Nov. 21, 1951) (15 F. R. 8512, 8513, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.283) to read as follows:

§ 78.283 *Specification ICC–103C–W; fusion-welded alloy steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification, it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.283–1 *Type.* (a) Tanks built under this specification must be cylindrical, with heads designed convex outward, and must have at least 1 expansion dome with manway, and such other external projections as are prescribed herein. When the interior of the tank is divided into compartments, each compartment must have 2 heads designed convex outward, 1 expansion dome with manway, and such other external protections as are prescribed herein.

§ 78.283–2 *Lagging.* (a) Not a specification requirement. If applied, the tank shell and expansion dome must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to the exterior of tank, the lagging over each heater element may be reduced in thickness.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.283–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint, must be at least 240 pounds per square inch.

§ 78.283–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal welded joint = 90 percent.

(1) The thickness of a dished head must be determined by the following formula, but in no case be less than that specified in paragraph (b) of this section:

$$t=\frac{5PL}{6SE}$$

where

t = thickness of plate in inches;
P = calculated bursting pressure pounds per square inch;
L = main inside radius to which head is dished measured on concave side in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of welded joint.

When head is formed from one piece, the efficiency may be considered as 100 percent.

(b) The minimum thickness of plates must be as follows:

Inside diameter of tanks	Bottom sheets	Shell sheets	Expansion dome sheets	Tank heads	Expansion dome heads	Interior compartment heads
	Inch	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
60 inches or under	7/16	¼	5/16	½	5/16	5/16
Over 60 to 78 inches	7/16	5/16	5/16	½	5/16	5/16
Over 78 to 96 inches	½	⅜	5/16	½	5/16	⅜
Over 96 to 112 inches	½	7/16	5/16	9/16	5/16	7/16
Over 112 to 122 inches	½	½	5/16	⅝	5/16	½

(c) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal welded joint, including welds, above the cradle.

(d) For tanks built of 1 piece cylindrical sections, the thickness specified for bottom sheet must apply to the entire cylindrical shell.

(e) When tank is divided into compartments the interior head must comply with the requirements for interior compartment heads prescribed herein. When capacity of tank is reduced by moving in the exterior head a new exterior head of approved contour not less than ⅜ inch thickness must be applied. When the capacity is reduced by the insertion of a new interior head this head must comply with the requirements for interior compartment heads and the exterior head reapplied. Voids, created by the addition of heads for division into compartments or reduction in capacity, must be provided with a tapped drain hole at their lowest point, and a tapped hole at top of tank. The top hole must be closed, and the bottom hole may be closed, with not less than ¾ inch nor more than 1½ inch solid pipe plugs having standard pipe threads.

§ 78.283–5 *Material.* (a) All plates, forgings, tubes and castings for tank and expansion dome, and all projections and their closures, must be to an approved specification and be made of a metal capable of resisting the action of nitric acid as follows:

(1) The maximum corrosion rate in inches penetration per month in the standard 65 percent boiling nitric acid test shall be 0.006 for the straight chromium-bearing stainless steel and 0.0015 for any of the chromium nickel alloys. This figure to be an average of five 48-hour periods.

§ 78.283–6 *Tank heads.* (a) Tank heads must be of approved contour and must be designed for pressure on concave side and to main inside radius not exceeding 10 feet. The inside knuckle radius must not be less than 3¾ inches except for interior heads of compartment tanks the knuckle radius must not be less than 1½ inches.

§ 78.283–7 *Welding* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with requirements of AAR Welding Code Appendix "W".

§ 78.283–8 *Manway flange, safety valves flange, and sump flange or other attachments.* (a) These attachments must be fusion-welded. Fusion-welding for securing these attachments in place must be of the double-welded butt joint type or double full-fillet lap joint type.

§ 78.283–9 *Heat treatment.* (a) All welding of the tank shell and of attachments welded directly thereto must be heat treated as a unit to remove stresses and at the proper temperature to obtain the corrosion resistance specified in § 78.283–5 (a) (1)

§ 78.283–10 *Tank mounting.* (a) The manner in which the tank is supported on and securely attached to the car structure must be approved.

(b) The use of rivets as a means of securing anchor to the tank is prohibited.

§ 78.283–11 *Expansion dome.* (a) The expansion dome must have a capacity measured from the inside top of shell of tank to the inside top of dome or bottom of any vent pipe projecting inside dome, of at least 1 percent of the total capacity of the tank and dome combined.

(b) The opening for manway must be at least 18 inches in diameter. The opening in the tank shell within the dome must be at least 29 inches in diameter. When the opening in the tank shell exceeds 30 inches in diameter, the opening must be reinforced in an approved manner. When the opening in the tank shell is less than the inside diameter of the dome, dome pocket drain holes must be provided in the tank shell with nipples extending inside the tank at least 1 inch.

(c) The dome head must be of material complying with requirements of § 78.283–5 (a), and designed convex outward to a radius of not more than 10 feet.

§ 78.283–12 *Closures for manway.* (a) The manway cover must be of approved type and designed to provide a secure closure of the manway.

(b) Manway flange and cover must be made of the metal prescribed in § 78.283–5 (a).

(c) All joints between manway covers and their seats must be made tight

against leakage of vapor and liquid by use of gaskets of suitable material.

§ 78.283–13 *Gauging, venting, loading and unloading, and air inlet devices extending through domes of tanks.* (a) When installed these devices, including their valves, must be of approved design and must be tightly closed. Protective housing of approved design covering all these devices must be installed. Unloading pipe must be securely anchored within the tank.

(b) Gauging, venting, loading and unloading, and air inlet devices, when installed must be provided with efficient valves, made of material complying with the requirements of § 78.283–5 (a). Provision must be made for closing pipe connections of valves.

§ 78.283–14 *Bottom outlets.* (a) Bottom outlet prohibited. Bottom sump of cast, fabricated, or forged metal is permissible. If used it must be welded to tank and must be made of material complying with requirements of § 78.283–5 (a).

§ 78.283–15 *Safety valves.* (a) The tank must be equipped with a safety valve at least 2 inches inside diameter mounted on top of expansion dome. Total valve discharge capacity must be sufficient to prevent building up pressure in tank in excess of 45 pounds per square inch.

(b) One safety valve must be provided for each tank or compartment thereof.

(c) The safety valve must be set to open at a pressure of 35 pounds per square inch and be vapor-tight at 28 pounds per square inch. (For tolerance see § 78.283–20 (a).)

(d) Safety valve flanges must be of cast, forged or fabricated material complying with the requirements of § 78.283–5 (a).

§ 78.283–16 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) All attachments to tank and dome must be applied by welding. Interior heater systems, when installed, must be so constructed that the breaking off of their external connections will not cause leakage of the contents of tanks.

§ 78.283–17 *Interior heater systems.* (a) See §§ 78.260 and 78.261, heater systems.

(b) Interior heater systems and plug flanges, must be of cast, forged or fabricated material complying with the requirements of § 78.283–5 (a).

§ 78.283–18 *Closures for openings.* (a) All plugs must be solid, made of materials prescribed in § 78.283–5 (a), with standard pipe thread, and must be of a length which will screw at least 6 threads inside the face of fitting or tank. Plugs, when inserted from the outside of tank heads must have the letter "S" at least ⅜ inch in size stamped with steel stamp or cast on the outside surface to indicate the plug is solid.

§ 78.283–19 *Tests of tanks.* (a) Each tank must be tested, before being put into service, by completely filling the tank and dome with water, or other liquid having similar viscosity, of a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 60 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All closures, except safety valves, must be in place while test is made.

(b) If tanks are to be lagged, the test of tank must be made before lagging is applied.

(c) Calking of welded joints to stop leaks developed during the foregoing tests prohibited. Repairs in welded joints must be made as prescribed in § 78.283–7 (a).

(d) Tests of interior heater systems: Before interior heater systems are placed in service they must be tested with hydrostatic pressure and must be tight at 200 pounds per square inch.

§ 78.283–20 *Tests of safety valves.* (a) Valve must be tested before being put into service, by attaching to an air line and applying pressure. The valve must open at the pressure prescribed in § 78.283–15 (c) with a tolerance of plus or minus three (3) pounds.

§ 78.283–21 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–103C–W and specification number of material used in tank shell and expansion dome in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. ICC–103C–W must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph, by the party assembling the completed car. These marks must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(6) Date on which interior heater systems were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(7) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the tank, or jacket if lagged, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.283–22 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish the car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of, or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

28. Amend entire § 78.284 (17 F. R. 9841, Nov. 1, 1952) (15 F. R. 8513, 8514, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.284) to read as follows:

§ 78.284 *Specification ICC–104–W; lagged fusion-welded steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.284–1 *Type.* (a) Tanks built under this specification must be cylindrical, with heads designed convex outward, and must have at least 1 expansion dome with manway, and such other external projections as are prescribed herein. When the interior of the tank is divided into compartments each compartment must have 2 heads designed convex outward, 1 expansion dome with manway, and such other external projections as are prescribed herein.

§ 78.284–2 *Lagging.* (a) The tank shell and expansion dome must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather-tight. When heater systems are attached to exterior of tank, the lagging over each heater element may be reduced in thickness equivalent to ½ that required for the shell.

(b) Before lagging is applied, the tank surface and the inside surface of the

metal jacket shall be given a protective coating.

§ 78.284–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint, must be at least 240 pounds per square inch.

§ 78.284–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula, but in no case shall the wall thickness be less than that specified in paragraph (b) of this section.

$$t=\frac{Pd}{2SE}$$

where
t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal welded joint = 90 percent.

(1) The thickness of a dished head must be determined by the following formula, but in no case be less than that specified in paragraph (b) of this section:

$$t=\frac{5PL}{6SE}$$

where
t = thickness of plate in inches;
P = calculated bursting pressure pounds per square inch;
L = main inside radius to which head is dished measured on concave side in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of welded joint.

When head is formed from one piece, the efficiency may be considered as 100 percent.

(b) The minimum thickness of plates must be as follows:

Inside diameter of tanks	Bottom sheets	Shell sheets	Expansion dome sheets	Tank heads	Expansion dome heads	Interior compartment heads
	Inch	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
60 inches or under	7/16	1/4	5/16	1/2	5/16	5/16
Over 60 to 78 inches	7/16	5/16	5/16	1/2	5/16	5/16
Over 78 to 96 inches	1/2	3/8	5/16	1/2	5/16	3/8
Over 96 to 112 inches	1/2	7/16	5/16	9/16	5/16	7/16
Over 112 to 122 inches	1/2	1/2	5/16	5/8	5/16	1/2

(c) The minimum thickness of clad plates, where cladding material has physical properties at least equal to that of the base plate prescribed in § 78.284–5 (a), must be as prescribed in the above table. Where the cladding material does not have physical properties at least equal to that of the base plate prescribed in § 78.284–5 (a), minimum thickness of base plate must be as prescribed in the above table.

(d) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal welded joint, including welds, above the cradle.

(e) For tanks built of one piece cylindrical sections, the thickness specified for bottom sheet must apply to the entire cylindrical shell.

(f) For tanks without underframe the minimum thickness of bottom sheet must not be less than 5/8 inch.

(g) When tank is divided into compartments the interior head must comply with the requirements for interior compartment heads prescribed herein. When capacity of tank is reduced by moving in the exterior head a new exterior head of approved contour not less than 3/8 inch thickness must be applied. When the capacity is reduced by the insertion of a new interior head this head must comply with the requirements for interior compartment heads and the head reapplied. Voids, created by the addition of heads for division into compartments or reduction in capacity, must be provided with a tapped drain hole at their lowest point, and a tapped hole at top of tank. The top hole must be closed, and the bottom hole may be closed, with not less than 3/4 inch nor more than 1 1/2 inch solid pipe plugs having standard pipe threads.

§ 78.284–5 *Material.* (a) All plates for tank and expansion dome must be made of open-hearth boiler-plate flange quality steel to an approved specification. The carbon content of which shall not exceed 0.31 percent. These plates may also be clad with other metals, such as nickel.

(b) All castings used for fittings or attachments to tank must be made of material to an approved specification.

(c) Rivets, if used, must be of the same quality as used for steam boilers and other pressure vessels and be made of steel to an approved specification. When clad plates are used and attachments are riveted, the rivet heads inside the tank must be clad with the same material, or, rivets may be of the same material as the cladding, provided rivets have physical properties at least equivalent to rivets prescribed herein.

(d) All external projections must be made of materials specified herein.

(e) Lining or interior coating is not a specification requirement. If applied, it must be approved as to material.

§ 78.284–6 *Tank heads.* (a) Tank heads must be of approved contour and must be designed for pressure on concave side and to main inside radius not exceeding 10 feet. The inside knuckle radius must not be less than 3 3/4 inches except for interior heads of compartment tanks the knuckle radius must not be less than 1 1/2 inches.

§ 78.284–7 *Welding.* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with the requirements of A. A. R. Welding Code Appendix W.

§ 78.284–8 *Manway ring, safety valve flange, and bottom outlet nozzle flange or other attachments.* (a) The attachments may be riveted or fusion-welded. Riveted joints must be made metal to metal without interposition of other material. Rivets, if used, must be driven hot and calked inside. For computing rivet areas the effective diameter of a driven rivet is the diameter of its reamed hole, which hole must in no case exceed nominal diameter of rivet by more than 1/16 inch. Use of rivets of less than 5/8 inch nominal diameter prohibited. Fusion-welding for securing these attachments in place must be of double-welded butt joint type or double full-fillet lap joint type.

(b) *Calking.* All attachments riveted to tank must have the rivets calked, and the joints formed by the attachments, calked on the inside of tank.

§ 78.284–9 *Stress-relieving.* (a) All welding of the tank shell and of attachments welded directly thereto must be stress-relieved as a unit.

§ 78.284–10 *Tank mounting.* (a) The manner in which the tank is supported on and securely attached to the car structure must be approved.

§ 78.284–11 *Anchor rivets.* (a) If used, they may have their heads on the inside of the tank shell covered and protected from the lading by a liquid-tight housing of approved design. The lower portion of the housing must be fusion-welded to, and stress-relieved with the tank shell as a unit. After the rivets have been driven and calked, the top portion of the housing must be secured to the top of the lower portion by an approved method of welding, which welding need not be stress-relieved. A hole must be provided through tank shell, under each housing to permit making air pressure tests. Each test hole must be tightly closed after completion of test with an approved plug.

§ 78.284–12 *Expansion dome.* (a) The expansion dome must have a capacity measured from the inside top of shell of tank to the inside top of dome or bottom of any vent pipe projecting inside the dome, of at least 2 percent of the total capacity of the tank and dome combined, except that when safety valve or safety vent is applied to side of dome, the effective capacity of dome must be measured from top of safety valve or safety vent opening in the side of dome to inside top of shell of tank.

(b) The opening in manway ring must be at least 16 inches in diameter. The opening in the tank shell within the dome must be at least 29 inches in diameter. When the opening in the tank shell exceeds 30 inches in diameter, the opening must be reinforced in an approved manner. When the opening in the tank shell is less than the inside diameter of the dome, and the dome pocket is not closed off in an approved manner, dome pocket drain holes must be provided in the tank shell with nipples projecting inside the tank at least 1 inch.

(c) The dome head must be of approved contour and must be designed for pressure on concave side.

§ 78.284–13 *Closures for manways.* (a) The manway cover must be of approved type and designed to make it impossible to remove the cover while the interior of the tank is subjected to pressure.

(b) Manway covers must be made of cast, forged, or fabricated steel, malleable iron or other malleable metals. Manway rings, if riveted to dome of tank, must be of cast, forged, or fabricated steel, malleable iron or other malleable metals. Manway rings, if welded to dome of tank, must be made of cast, forged, or fabricated steel and be of good weldable quality in conjunction with metal of dome.

(c) All covers not hinged must be attached to outside of dome head by at least ⅜ inch chain or its equivalent.

(d) All joints between manway covers and their seats must be made tight against leakage of vapor and liquid by use of gaskets of suitable material.

§ 78.284–14 *Gauging, bottom outlet valve operating rod, venting, loading and unloading, and air inlet devices extending through domes of tanks.* (a) Venting, loading, and unloading devices of approved design must be installed.

(b) Gauging, bottom outlet valve operating rod, and air inlet devices are not specification requirements.

(c) When installed, these devices, including their valves and fittings, must be of approved design, made of materials not subject to rapid deterioration by the lading. These devices, including their valves, must be provided with a protective housing. Unloading pipe must be securely anchored within the tank. Provisions must be made for closing pipe connections of valves.

§ 78.284–15 *Bottom outlets.* (a) The bottom outlet, when installed, must be made of metal not subject to rapid deterioration by the lading, be of approved construction, and be provided with a valve at its upper end and a liquid tight closure at its lower end.

(b) The valve operating mechanism and outlet nozzle construction must be such as to insure against unseating of valve due to stresses or shocks incident to transportation.

(c) Bottom outlet nozzle may be cast, fabricated, or forged metal. If outlet nozzle is welded to tank, it must be of cast, forged or fabricated metal and be of good weldable quality in conjunction with metal of tank.

(d) To provide for the attachment of standard unloading connections, the bottom of the main portion of the outlet nozzle or some fixed attachment thereto, must have external Unified Form Theads, 4 threads to the inch.

(e) For outlet nozzles that project 6 inches or more from shell of tank a "V" groove must be cut (not cast) in the upper part of outlet valve nozzle at a point immediately below lowest part of valve to a depth that will leave thickness of nozzle wall at the root of the "V" not over ⅜ inch. In the case of steam jacketed outlet nozzles this groove must be below the steam chamber but above the bottom of center sill construction. Where outlet nozzle is not a single piece, arrangement must be made to provide the equivalent of the breakage groove.

(f) The flange on the outlet nozzle must be of a thickness which will prevent distortion of the valve seat or valve by any change in contour of the shell resulting from expansion of lading, or other causes, and which will insure that accidental breakage of the outlet nozzle will occur at or below the "V" groove.

(g) The valve must have no wings or stem projecting below the "V" groove in the outlet nozzle. The valve and seat must be readily accessible or removable for repairs, including grinding.

(h) The valve operating mechanism must have means for compensating for variation in the vertical diameter of the tank produced by expansion, weight of the liquid contents, or other causes, and should operate from the interior of the tank, but in the event the rod is carried through the dome, leakage must be prevented by packing in stuffing box and cap nut.

(i) In no case must extreme projection of bottom outlet equipment extend to within 12 inches above top of rail. All bottom outlet reducers and closures and their attachments must be secured to car by at least ⅜ inch chains or its equivalent, except that outlet closure plugs may be attached by ¼ inch chain. When the bottom outlet closure is of the combination cap and valve type, the pipe connection to the valve must be closed by a plug or cap.

§ 78.284–16 *Safety valves.* (a) The tank must be equipped with one or more safety valves of approved design mounted on expansion dome. Total valve discharge capacity must be sufficient to prevent building up of pressure in the tank in excess of 45 pounds per square inch.

(b) One safety valve must be provided for each tank, or compartment thereof, of 6,650 gallons capacity or less, and two safety valves for each tank, or compartment thereof, of over 6,650 gallons capacity.

(c) Each safety valve must be set to open at a pressure of 35 pounds per square inch and be vapor-tight at 28 pounds per square inch. (For tolerance see § 78.284–21 (a).)

(d) Tanks used for the transportation of corrosive liquids, flammable solids, oxidizing materials, or poisonous liquids or solids, class B, need not be equipped with safety valves, but if not so equipped, must have one safety vent at least 1¾ inches inside diameter closed with a frangible disc of lead or other suitable material of a thickness that will rupture at not more than 45 pounds per square inch. Means for holding disc in place must be such as to prevent distortion or damage to disc when applied. Safety vent closures must be chained or otherwise fastened to prevent misplacement. All tanks equipped with vents must be stenciled "Not for Flammable Liquids."

(e) Safety valve or safety vent flanges, if welded to dome, must be of cast, forged or fabricated metal, and be of good weldable quality in conjunction with metal of dome.

§ 78.284–17 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) All attachments to tank and dome must be applied by approved means. When attachments are riveted the edges of plates must be beveled so that the angle of the calking edge will be between 60 and 70 degrees with the flat surface of the attachment. The extreme calking edge distance, measured from center line of rivet hole, must be at least 1½ times the diameter of the hole plus ¼ inch. The joints formed by attachment of all riveted external projections must be calked on the inside. All rivet heads on the inside and outside of tank and dome must be calked. Split calking is prohibited. Interior heater systems, when installed, must be so constructed that the breaking off of their external connections will not cause leakage of contents of tank.

§ 78.284–18 *Interior heater systems.* (a) See §§ 78.260 and 78.261, heater systems.

(b) Interior heater systems and plug flanges, if welded to tank or dome, must be of cast, forged, or fabricated metal, and be of good weldable quality in conjunction with metal of tank or dome.

§ 78.284–19 *Closures for openings.* (a) All plugs must be solid, of good grade cast iron or equivalent, with standard pipe thread of a length which will screw at least 6 threads inside the face of fitting or tank. Plugs when inserted from the outside of tank must have the letter "S" at least ⅜ inch in size stamped with steel stamp or cast on the outside surface to indicate the plug is solid.

§ 78.284–20 *Tests of tanks.* (a) Each tank must be tested before being put into service and before lagging is applied by completely filling tank and dome with water, or other liquid of similar viscosity, of a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 60 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All rivets and closures, except safety valves or safety vents, must be in place while test is made.

(b) Calking of welded joints to stop leaks developed during the foregoing tests is prohibited. Repairs in welded joints must be made as prescribed in § 78.284–7 (a).

(c) Tests of interior heater systems: Before interior heater systems are placed in service they must be tested with hydrostatic pressure and must be tight at 200 pounds per square inch.

(d) Anchor rivet housing test: After anchor rivet housing, if applied, are in place these housings must be tested by applying an air pressure of 100 pounds per square inch through openings in tank shell and must be tight against leakage.

§ 78.284–21 *Tests of safety valves.* (a) Each valve must be tested, before being put into service, by attaching to an air line and applying pressure. The valve must not leak below 28 pounds per square inch pressure. The valve must open at the pressure prescribed in § 78.284–16 (c), with a plus or minus 3 pounds.

§ 78.284–22 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements

of this specification. These marks must be as follows:

(1) ICC–104–W in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. This mark must also be stenciled on the jacket in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of the tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

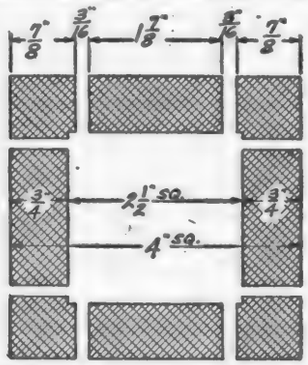
(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, such as application of riveted anchors, etc., in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph by the party assembling the completed car. These marks must also be stenciled on the jacket in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(6) Date on which the interior heater systems were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(7) Identification mark, illustrated herein, for approved manway closure must be stenciled on each side of dome jacket in line with the ladders and in a color contrasting to color of dome jacket.



Manhole Closure Identification Mark

(Reduced size)

(8) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the jacket in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

(9) Tanks equipped with safety valves set to open at a pressure of 35 pounds per square inch, as prescribed in § 78.284–16 (e), must be stenciled "For Vapor Pressures Not Exceeding 40 Pounds Per Square Inch Absolute at 100 Degrees Fahrenheit" in letters and figures at least 1 inch high immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

(10) Tanks made of clad plates must be stenciled on the jacket "(naming material) _____ clad tank". Lined tanks must be stenciled on the jacket "(naming material) _____ lined tank". These marks must be in letters at least 2 inches high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.284–23 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of, or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

29. Amend entire § 78.285 (18 F. R. 3145, June 2, 1953) (17 F. R. 9841, Nov. 1, 1952) (17 F. R. 7287, Aug. 9, 1952) (16 F. R. 11784, Nov. 21, 1951) (15 F. R. 8514, 8515, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.285) to read as follows:

§ 78.285 *Specification ICC–105A100–W; lagged fusion-welded steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.285–1 *Type.* (a) Tanks built under this specification must be cylindrical with heads designed convex outward. The tank must be provided with a manway nozzle and cover on top of the tank of sufficient diameter to permit access to the interior of the tank and to provide for the proper mounting of venting, loading, unloading, sampling and safety valves, gauging device, thermometer well, and a protective housing on the cover. Other openings in the tank are prohibited.

§ 78.285–2 *Lagging.* (a) The tank shell and manway nozzle must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.075 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to exterior of tank, the lagging over each heater element may be reduced in thickness to ½ that required for the shell.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.285–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint must be at least 495 pounds per square inch.

§ 78.285–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula, but in no case shall the wall thickness be less than that specified in paragraph (b) of this section.

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal welded joint = 90 percent.

(b) The minimum thickness of plates must be as follows:

Inside diameter of tanks	Bottom sheets	Shell sheets	Tank heads
	Inch	*Inch*	*Inch*
87 inches or under	½	½	½
Over 87 to 96 inches	9/16	9/16	9/16

(c) The minimum thickness of clad plates, where cladding material has physical properties at least equal to that of the base plate prescribed in § 78.285–6 (a) must be as prescribed in the above table. Where the cladding material does not have physical properties at least equal to that of the base plate prescribed in § 78.285–6 (a), minimum thickness of base plate must be as prescribed in the above table.

§ 78.285–5 *Manway nozzle opening.* (a) Opening in tank for manway nozzle must be reinforced in an approved manner.

§ 78.285–6 *Material.* (a) All plates for tank and manway nozzle must be made of open-hearth boiler-plate flange quality steel to an approved specification, the carbon content of which shall not exceed 0.31 percent. These plates may also be clad with other metals, such as nickel.

(b) All castings used for fittings or attachments to tank must be made of material to an approved specification. Use of cast iron prohibited.

(c) All external projections must be made of materials specified herein.

(d) Lining or interior coating is not a specification requirement. If applied, it must be approved as to material.

§ 78.285–7 *Tank heads.* (a) The tank head shape shall be an ellipsoidal of revolution in which the major axis shall equal the diameter of the shell and the minor axis shall be ½ the major axis.

§ 78.285–8 *Welding.* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with the requirements of AAR Welding Code Appendix "W".

§ 78.285–9 *Stress relieving.* (a) All welding of the tank shell and of attachments welded directly thereto must be stress-relieved as a unit.

§ 78.285–10 *Tank mounting.* (a) The manner in which the tank is supported on and securely attached to the car structure must be approved.

(b) The use of rivets as a means of securing anchor to the tank is prohibited.

§ 78.285–11 *Manway nozzle, cover, and protective housing.* (a) Manway nozzle must be of approved design of cast, forged or rolled steel at least 18 inches inside diameter and attached to tank by fusion welding. Fusion welding for securing this attachment in place must be of the double-welded butt joint type or double full-fillet lap joint type.

(b) Manway cover must be of forged or rolled steel at least 2¼ inches thick, machined to approved dimensions. Manway cover must be attached to manway nozzle by through or stud bolts not entering tank.

(c) The shearing value of the bolts attaching protective housing to manway cover must not exceed 70 percent of shearing value of bolts attaching manway cover to manway nozzle.

(d) All joints between manway cover and manway nozzle, and between manway cover and valves or other appurtenances mounted thereon, must be made tight against vapor pressure.

(e) Protective housing of cast or fabricated steel must be bolted to manway cover. Housing must be equipped with a suitable metal cover that can be securely closed. Housing cover on tanks used for the transportation of liquefied flammable gases must be provided with an opening equipped with an approved weather-proof covering and having an area at least equal to the total safety valve discharge area. Housing cover must have suitable stop to prevent cover striking loading or unloading connections and be hinged on one side only with approved riveted pin or rod with nuts and cotters. Openings in wall of housing must be equipped with screw plugs or other closures.

§ 78.285–12 *Venting, loading and unloading, gauging and sampling devices and thermometer well.* (a) Venting, loading and unloading valves must be of approved type, made of metal not subject to rapid deterioration by the lading, and must withstand a pressure of 100 pounds per square inch without leakage. The valves must be directly bolted to seatings on manway cover. Pipe connections of valves must be closed with approved screw plugs chained or otherwise fastened to prevent misplacement.

(b) Interior pipes of the loading and unloading valves, except as prescribed in paragraph (d) of this section, may be equipped with excess flow valves of an approved design.

(c) Gauging device, sampling valve, and thermometer well are not specification requirements. When used they must be of approved design, made of metal not subject to rapid deterioration by the lading, and must withstand a pressure of 100 pounds per square inch without leakage. Interior pipes of the gauging device and sampling valve, except as prescribed in paragraph (d) of this section, may be equipped with excess flow valves of an approved design. Interior pipe of thermometer well must be anchored in an approved manner to prevent breakage due to vibration. The thermometer well must be closed by an approved valve attached close to the manway cover and closed by a screw plug. Other approved arrangements that permit testing thermometer well for leaks without complete removal of the closure may be used.

(d) Tanks used for the transportation of liquefied flammable gases must have the interior pipes of the loading and unloading valves, gauging device and sampling valve equipped with excess flow valves of an approved design.

§ 78.285–13 *Safety valves.* (a) The tank must be equipped with one or more safety valves of approved design, made of metal not subject to rapid deterioration by the lading and mounted on manway cover. The total valve discharge capacity must be sufficient to prevent building up of pressure in tank in excess of 75 pounds per square inch.

(b) The safety valves must be set to open at a pressure not exceeding 75 pounds per square inch. (For tolerance see § 78.285–17 (a)).

§ 78.285–14 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) Attachments, other than anchorage and those mounted on manway cover, are prohibited. Heater systems may be applied to exterior of tank by tank bands or other approved methods.

§ 78.285–15 *Closures for openings.* (a) Plugs must be of approved type, with standard pipe thread, and made of metal not subject to rapid deterioration by the lading.

§ 78.285–16 *Tests of tanks.* (a) Each tank must be tested by completely filling tank and manway nozzle with water or other liquid of similar viscosity having a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 100 pounds per square inch. The tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress.

(b) Calking of welded joints to stop leaks developed during the foregoing tests is prohibited. Repairs in welded joints must be made as prescribed in § 78.285–8 (a).

(c) Tests of exterior heater systems not a specification requirement.

§ 78.285–17 *Tests of safety valves.* (a) Each valve must be tested by air or gas before being put into service. The valve must open at a pressure not exceeding 75 pounds per square inch and be vapor tight at 60 pounds per square inch, which limiting pressures must not be affected by any auxiliary closure or other combination.

§ 78.285–18 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification as follows:

(1) ICC–105A100–W in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. This mark must also be stenciled on the jacket in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph, by the party assembling the completed car. These marks must also be stenciled on the jacket in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(6) Water capacity of the tank in pounds stamped plainly and permanently in letters and figures at least ⅜ inch high into the metal of the tank immediately below the mark specified in subparagraphs (2) and (3) of this paragraph. This mark must also be stenciled on the jacket immediately below the dome platform and either directly behind or within 3 feet of the right or left side of the ladder, or ladders if there is a ladder on each side of the tank, in letters and figures at least 2 inches high as follows:

WATER CAPACITY
000000 POUNDS

(7) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that com-

modity followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the jacket, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

(8) Tanks made of clad plates must be stenciled on the jacket (naming material) _____ clad tank. Lined tanks must be stenciled on the jacket (naming material) _____ lined tank. These marks must be in letters at least 2 inches high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.285–19 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and numbers of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

30. Amend entire § 78.286 (18 F. R. 3148, June 2, 1953) (17 F. R. 9841, Nov. 1, 1952) (16 F. R. 11784, Nov. 21, 1951) (15 F. R. 8515, 8516, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.286) to read as follows:

§ 78.286 *Specification ICC–105A300–W; lagged fusion-welded steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.286–1 *Type.* (a) Tanks built under this specification must be cylindrical with heads designed convex outward. The tank must be provided with manway nozzle and cover on top of the tank of sufficient diameter to permit access to the interior of the tank and to provide for the proper mounting of venting, loading, unloading, sampling, and safety valves, gauging device, thermometer well, and a protective housing on the cover. Other openings in the tank are prohibited.

§ 78.286–2 *Lagging.* (a) The tank shell and manway nozzle must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.075 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to exterior of tank, the lagging over each heater element may be reduced in thickness equivalent to ½ that required for the shell.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.286–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint must be at least 750 pounds per square inch.

§ 78.286–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank and tank heads must be calculated by the following formula but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure in pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal welded joint = 90 percent.

(b) The minimum thickness of plates must be $^{11}/_{16}$ inch.

(c) The minimum thickness of clad plates, where cladding material has physical properties at least equal to that of the base plate prescribed in § 78.286–6 (a), must be as prescribed in paragraph (b) of this section. Where the cladding material does not have physical properties at least equal to that of the base plate prescribed in § 78.286–6 (a), minimum thickness of base plate must be as prescribed in paragraph (b) of this section.

§ 78.286–5 *Manway nozzle opening.* (a) Opening in tank for manway nozzle must be reinforced in an approved manner.

§ 78.286–6 *Material.* (a) All plates for tank and manway nozzle must be made of open-hearth boiler-plate flange quality steel to an approved specification, the carbon content of which shall not exceed 0.31 percent. These plates may also be clad with other metals, such as nickel.

(b) All castings used for fittings or attachments to tank must be made of material to an approved specification. The use of cast iron is prohibited.

(c) All external projections must be made of materials specified herein.

(d) Lining or interior coating is not a specification requirement. If applied, it must be approved as to material.

§ 78.286–7 *Tank heads.* (a) The tank head shape shall be an ellipsoid of revolution in which the major axis shall equal the diameter of the shell and the minor axis shall be ½ of the major axis.

§ 78.286–8 *Welding.* (a) All joints must be fusion welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with the requirements of AAR Welding Code Appendix "W".

§ 78.286–9 *Stress relieving.* (a) All welding of the tank shell and of attachments welded directly thereto, must be stress-relieved as a unit.

§ 78.286–10 *Tank mounting.* (a) The manner in which tank is supported on and securely attached to the car structure must be approved.

(b) The use of rivets as a means of securing anchor to the tank is prohibited.

§ 78.286–11 *Manway nozzle, cover and protective housing.* (a) Manway nozzle must be of forged or rolled steel at least 18 inches inside diameter. Manway nozzle must be of approved design and attached to tank by fusion-welding. Fusion welding for securing this attachment in place must be of the double-welded butt joint type or double full-fillet lap joint type.

(b) Manway cover must be of forged or rolled steel at least 2¼ inches thick (or nickel at least 2 inches thick when required by the lading), machined to approved dimensions. Manway cover must be attached to manway nozzle by through or stud bolts not entering tank.

(c) The shearing value of the bolts attaching protective housing to manway cover must not exceed 70 percent of shearing value of bolts attaching manway cover to manway nozzle.

(d) All joints between manway cover and manway nozzle, and between manway cover and valves or other appurtenances mounted thereon, must be made tight against vapor pressure.

(e) Protective housing of cast or fabricated steel must be bolted to manway cover. Housing must be equipped with a suitable metal cover that can be securely closed. Housing cover on tanks used for the transportation of liquefied flammable gases must be provided with an opening equipped with an approved weather proof covering and having an area at least equal to the total safety valve discharge area. Housing cover must have suitable stop to prevent cover striking loading or unloading connections and be hinged on one side only with approved riveted pin or rod with nuts and cotters. Openings in wall of housing must be equipped with screw plugs or other closures.

§ 78.286–12 *Venting, loading and unloading valves, gauging and sampling device and thermometer well.* (a) Venting, loading and unloading valves must be of approved type, made of metal not subject to rapid deterioration by lading, and must withstand a pressure of 300 pounds per square inch without leakage. The valves must be directly bolted to seatings on manway cover. Pipe connections of the valves must be closed with approved screw plugs or otherwise fastened to prevent misplacement.

(b) The interior pipes of the loading and unloading valves, except as prescribed in paragraphs (d) and (e) of this section, may be equipped with excess flow valves of an approved design.

(c) Gauging device, sampling valve and thermometer well are not specification requirements. When used, they must be of approved design, made of metal not subject to rapid deterioration by lading, and must withstand a pressure of 300 pounds per square inch without leakage. Interior pipes of the gauging device and sampling valve, except as prescribed in paragraph (d) of this section, may be equipped with excess flow valves of an approved design. Interior pipe of the thermometer well must be anchored in an approved manner to prevent breakage due to vibration. The thermometer well must be closed by an approved valve attached close to the manway cover and closed by a screw plug. Other approved arrangements that permit testing thermometer well for leaks without complete removal of the closure may be used.

(d) Tanks for use in the transportation of liquefied flammable gases must have the interior pipes of the loading and unloading valves, gauging device and sampling valve equipped with excess flow valves of an approved design.

(e) Tanks for use in the transportation of chlorine must have the interior pipes of the liquid lines equipped with excess flow valves of an approved design.

§ 78.286–13 *Safety valves.* (a) The tank must be equipped with one or more safety valves of an approved design, made of metal not subject to rapid deterioration by lading and mounted on manway cover. The total valve discharge capacity must be sufficient to prevent building up of pressure in tank in exces of 225 pounds per square inch.

(b) The safety valve must be set to open at a pressure not exceeding 225 pounds per square inch. (For tolerance see § 78.286–17 (a).)

§ 78.286–14 *Fixtures, reinforcements and attachments not otherwise specified.* (a) Attachments, other than the anchorage, interior pipe bracing, and those mounted on manway cover, are prohibited. Heater systems may be applied to exterior of tank by tank bands or other approved methods.

§ 78.286–15 *Closures for openings.* (a) Plugs must be of approved type, with standard pipe thread, and of metal not subject to rapid deterioration by the lading.

§ 78.286–16 *Tests of tanks.* (a) Each tank must be tested, after anchorage is applied and before the tank lagging is applied, by completely filling tank and manway nozzle with water, or other liquid or similar viscosity, having a temperature which must not exceed 100 degrees Fahrenheit during test, and applying a pressure of 300 pounds per square inch. The tank must hold the prescribed pressure for at least 30 minutes without leakage or evidence of distress.

(b) Calking of welded joints to stop leaks developed during the foregoing tests prohibited. Repairs in welded joints must be made as prescribed in § 78.286–8 (a).

(c) Tests of exterior heater systems are not a specification requirement.

§ 78.286–17 *Tests of safety valves.* (a) Each valve must be tested by air or gas before being put into service. The valve must open at a pressure not exceeding 225 pounds per square inch and be vapor tight at 180 pounds per square inch, which limiting pressures must not be affected by any auxiliary closure or other combination.

§ 78.286–18 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–105A300–W in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. This mark must also be stenciled on the jacket in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph, by the party assembling the completed car. These marks must be stenciled on the jacket in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made and by whom, stenciled on the jacket.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(6) Water capacity of the tank in pounds stamped plainly and permanently in letters and figures at least ⅜ inch high into the metal of the tank immediately below the mark specified in subparagraphs (2) and (3) of this paragraph. This mark must also be stenciled on the jacket immediately below the dome platform and either directly behind or within 3 feet of the right or left side of ladder, or ladders if there is a ladder on each side of the tank, in letters and figures at least 2 inches high as follows:

WATER CAPACITY
000000 POUNDS

(7) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only" or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the jacket in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

(8) Tanks made of clad plates must be stenciled on the jacket "_____ (naming material) clad tank". Lined tanks must be stenciled on the jacket "_____ (naming material) lined tanks". These marks must be stenciled in letters at least 2 inches high, immediately above stenciled mark specified in subparagraph (7) of this paragraph.

§ 78.286–19 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

31. Amend entire § 78.287 (18 F. R. 3145, June 2, 1953) (16 F. R. 11784, Nov. 21, 1951) (15 F. R. 8516, 8517, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.287) to read as follows:

§ 78.287 *Specification ICC–105A400–W; lagged fusion-welded steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.287–1 *Type.* (a) Tanks built under this specification must be cylindrical with heads designed convex outward. The tank must be provided with manway nozzle and cover on top of the tank of sufficient diameter to permit access to the interior of the tank and to provide for the proper mounting of venting, loading, unloading, sampling, and safety valves, gauging device, thermometer well, and a protective housing on the cover. Other openings in the tank are prohibited.

§ 78.287–2 *Lagging.* (a) The tank shell and manway nozzle must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.075 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems

are attached to exterior of tank, the lagging over each heater element may be reduced in thickness equivalent to ½ that required for the shell.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.287–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint must be at least 1,000 pounds per square inch.

§ 78.287–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank and tank heads must be calculated by the following formula but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure in pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal welded joint = 90 percent.

(b) The minimum thickness of plates must be 11/16 inch.

(c) The minimum thickness of clad plates, where cladding material has physical properties at least equal to that of the base plate prescribed in § 78.287–6 (a), must be as prescribed in paragraph (b) of this section. Where the cladding material does not have physical properties at least equal to that of the base plate prescribed in § 78.287–6 (a), minimum thickness of base plate must be as prescribed in paragraph (b) of this section.

§ 78.287–5 *Manway nozzle opening.* (a) Opening in tank for manway nozzle must be reinforced in an approved manner.

§ 78.287–6 *Material.* (a) All plates for tank and manway nozzle must be made of open-hearth boiler-plate flange quality steel to an approved specification, the carbon content of which shall not exceed 0.31 percent. These plates may also be clad with other metals, such as nickel.

(b) All castings used for fittings or attachments to tank must be made of material to an approved specification. The use of cast iron is prohibited.

(c) All external projections must be made of materials specified herein.

(d) Lining or interior coating is not a specification requirement. If applied, it must be approved as to material.

§ 78.287–7 *Tank heads.* (a) The tank head shape shall be an ellipsoid of revolution in which the major axis shall equal the diameter of the shell and the minor axis shall be ½ of the major axis.

§ 78.287–8 *Welding.* (a) All joints must be fusion welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion welding in accordance with the requirements of AAR Welding Code Appendix "W".

§ 78.287–9 *Stress-relieving.* (a) All welding of the tank shell and of attachments welded directly thereto, must be stress-relieved as a unit.

§ 78.287–10 *Tank mounting.* (a) The manner in which tank is supported on and securely attached to the car structure must be approved.

(b) The use of rivets as a means of securing anchor to tank is prohibited.

§ 78.287–11 *Manway nozzle, cover and protective housing.* (a) Manway nozzle must be of forged or rolled steel at least 18 inches inside diameter. Manway nozzle must be of approved design and attached to tank by fusion-welding. Fusion-welding for securing this attachment in place must be of the double-welded butt joint type or double full-fillet lap joint type.

(b) Manway cover must be of forged or rolled steel at least 2¼ inches thick (or nickel at least 2 inches thick when required by the lading), machined to approved dimensions. Manway cover must be attached to manway nozzle by through or stud bolts not entering tank.

(c) The shearing value of the bolts attaching protective housing to manway cover must not exceed 70 percent of shearing value of bolts attaching manway cover to manway nozzle.

(d) All joints between manway cover and manway nozzle, and between manway cover and valves or other appurtenances mounted thereon, must be made tight against vapor pressure.

(e) Protective housing of cast or fabricated steel must be bolted to manway cover. Housing must be equipped with a suitable metal cover that can be securely closed. Housing cover on tanks used for the transportation of liquefied flammable gases must be provided with an opening equipped with an approved weather proof covering and having an area at least equal to the total safety valve discharge area. Housing cover must have suitable stop to prevent cover striking loading or unloading connections and be hinged on one side only with approved riveted pin or rod with nuts and cotters. Openings in wall of housing must be equipped with screw plugs or other closures.

§ 78.287–12 *Venting, loading and unloading valves, gauging and sampling device and thermometer well.* (a) Venting, loading and unloading valves must be of approved type, made of metal not subject to rapid deterioration by lading, and must withstand a pressure of 400 pounds per square inch without leakage. The valves must be directly bolted to seatings on manway cover. Pipe connections of the valves must be closed with approved screw plugs or otherwise fastened to prevent misplacement.

(b) The interior pipes of the loading and unloading valves, except as prescribed in paragraphs (d) and (e) of this section, may be equipped with excess flow valves of an approved design.

(c) Gauging device, sampling valve and thermometer well are not specification requirements. When used, they must be of approved design, made of metal not subject to rapid deterioration by lading, and must withstand a pressure of 400 pounds per square inch without leakage. Interior pipes of the gauging device and sampling valve, except as prescribed in paragraph (d) of this section, may be equipped with excess flow valves of an approved design. Interior pipe of thermometer well must be anchored in an approved manner to prevent breakage due to vibration. The thermometer well must be closed by an approved valve attached close to the manway cover and closed by a screw plug. Other approved arrangements that permit testing thermometer well for leaks without complete removal of the closure may be used.

(d) Tanks for use in the transportation of liquefied flammable gases must have the interior pipes of the loading and unloading valves, gauging device and sampling valve equipped with excess flow valves of an approved design.

(e) Tanks for use in the transportation of chlorine must have the interior pipes of the liquid lines equipped with excess flow valves of an approved design.

§ 78.287–13 *Safety valves.* (a) The tank must be equipped with one or more safety valves of an approved design, made of metal not subject to rapid deterioration by lading and mounted on manway cover. The total valve discharge capacity must be sufficient to prevent building up of pressure in tank in excess of 300 pounds per square inch.

(b) The safety valves must be set to open at a pressure not exceeding 300 pounds per square inch. (For tolerance see § 78.287–17 (a).)

§ 78.287–14 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) Attachments, other than the anchorage, interior pipe bracing, and those mounted on manway cover, are prohibited. Heater systems may be applied to exterior of tank by tank bands or other approved methods.

§ 78.287–15 *Closures for openings.* (a) Plugs must be of approved type, with standard pipe thread, and of metal not subject to rapid deterioration by the lading.

§ 78.287–16 *Tests of tanks.* (a) Each tank must be tested, after anchorage is applied and before the tank lagging is applied, by completely filling tank and manway nozzle with water, or other liquid of similar viscosity, having a temperature which must not exceed 100 degrees Fahrenheit during test, and applying a pressure of 400 pounds per square inch. The tank must hold the prescribed pressure for at least 30 minutes without leakage or evidence of distress.

(b) Calking of welded joints to stop leaks developed during the foregoing tests prohibited. Repairs in welded joints must be made as prescribed in § 78.287–8 (a).

(c) Tests of exterior heater systems not a specification requirement.

§ 78.287–17 *Tests of safety valves.* (a) Each valve must be tested by air or gas before being put into service. The valve must open at a pressure not exceeding 300 pounds per square inch and be vapor tight at 240 pounds per square inch, which limiting pressures must not be affected by any auxiliary closure or other combination.

§ 78.287–18 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–105A400–W in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. This mark must also be stenciled on the jacket in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph by the party assembling the completed car. These marks must be stenciled on the jacket in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph, by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made and by whom, stenciled on the jacket.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(6) Water capacity of the tank in pounds stamped plainly and permanently in letters and figures at least ⅜ inch high into the metal of the tank immediately below the mark specified in subparagraphs (2) and (3) of this paragraph. This mark must also be stenciled on the jacket immediately below the dome platform and either directly behind or within 3 feet of the right or left side of ladder, or ladders if there is a ladder on each side of the tank, in letters and figures at least 2 inches high as follows:

WATER CAPACITY
000000 POUNDS

(7) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only" or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the jacket in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

(8) Tanks made of clad plates must be stenciled on the jacket "_____ (naming material) clad tank". Lined tanks must be stenciled on the jacket _____ (naming metarial) lined tanks." These marked must be stenciled in letters at least 2 inches high, immediately above stenciled mark specified in subparagraph (7) of this paragraph.

§ 78.287–19 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

32. Amend entire § 78.288 (19 F. R. 3264, June 3, 1954) (18 F. R. 3145, June 2, 1953) (17 F. R. 9841, 9842, Nov. 1, 1952) (16 F. R. 11785, Nov. 21, 1951) (15 F. R. 8517 to 8519, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.288) to read as follows:

§ 78.288 *Specification ICC–105A500–W; lagged fusion-welded steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.288–1 *Type.* (a) Tanks built under this specification must be cylindrical with heads designed convex outward. The tank must be provided with a manway nozzle and cover on top of the tank of sufficient diameter to permit access to the interior of the tank and to provide for the proper mounting of venting, loading, unloading, sampling and safety valves, gauging device, thermometer well, and a protective housing on the cover. Other openings in the tank are prohibited.

§ 78.288–2 *Lagging.* (a) The tank shell and manway nozzle must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.075 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to exterior of tank, the lagging over each heater element may be reduced in thickness equivalent to one-half that required for shell.

(b) Tanks for use in the transportation of liquefied carbon dioxide must have tank shell and manway nozzle lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.03 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour; except that the insulation thickness directly over the center sill may be reduced to give a thermal conductance not exceeding 0.04 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour; this reduction is to permit an anchorage which must not exceed 7 inches from top of center sill to bottom of tank.

(c) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.288–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint must be at least 1250 pounds per square inch.

§ 78.288–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula, but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t = \frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure, pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength pounds per square inch;
E = efficiency of longitudinal welded joint = 90 percent.

(b) The minimum thickness of plates must be $^{11}/_{16}$ inch.

(c) The minimum thickness of clad plates, where cladding material has physical properties at least equal to that of the base plate prescribed in § 78.288–6 (a), must be as prescribed in paragraph (b) of this section. Where the cladding material does not have the physical properties at least equal to that of the base plate prescribed in § 78.288–6 (a), minimum thickness of base plate must be as prescribed in paragraph (b) of this section.

§ 78.288–5 *Manway nozzle opening.* (a) Opening in tank for manway nozzle must be reinforced in an approved manner.

§ 78.288–6 *Material.* (a) All plates for tank and manway nozzle must be of open-hearth boiler-plate flange quality steel to an approved specification, the carbon content of which shall not exceed 0.31 percent. These plates may also be clad with other metals, such as nickel.

(b) All plates for tank, manway nozzle and anchorage for tanks used in the transportation of liquefied carbon dioxide must be made of steel to an approved specification suitable for service at low temperatures.

(c) All castings used for fittings or attachments to tank must be made of ma-

terial to an approved specification. The use of cast iron is prohibited.

(d) All external projections must be made of materials specified herein.

(e) Lining or interior coating is not a specification requirement. If applied, it must be approved as to material.

§ 78.288–7 *Tank heads.* (a) The tank head shape shall be an ellipsoid of revolution in which the major axis shall equal the diameter of the shell and the minor axis shall be ½ of the major axis.

§ 78.288–8 *Welding.* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with the requirements of A. A. R. Welding Code Appendix "W".

§ 78.288–9 *Stress relieving.* (a) All welding of the tank shell and of attachments welded directly thereto must be stress-relieved as a unit.

§ 78.288–10 *Tank mounting.* (a) The manner in which the tank is supported on and securely attached to the car structure must be approved.

(b) The use of rivets as a means of securing anchor to tank is prohibited.

§ 78.288–11 *Manway nozzle, cover and protective housing.* (a) Manway nozzle must be of forged or rolled steel at least 18 inches inside diameter. Manway nozzle must be of approved design and attached to tank by fusion-welding. Fusion-welding for securing this attachment in place must be of the double-welded butt joint type or double full-fillet lap joint type.

(b) Manway cover must be of forged or rolled steel at least 2¼ inches thick machined to approved dimensions. Manway cover must be attached to manway nozzle by through or stud bolts not entering tank.

(c) The shearing value of the bolts attaching protective housing to manway cover must not exceed 70 percent of shearing value of bolts attaching manway cover to manway nozzle.

(d) All joints between manway cover and manway nozzle, and between manway cover and valves or other appurtenances mounted thereon, must be made tight against vapor pressure.

(e) Protective housing of cast or fabricated steel must be bolted to manway cover. Housing must be equipped with a suitable metal cover that can be securely closed. Housing cover on tanks used for the transportation of liquefied flammable gases must be provided with an opening equipped with an approved weather-proof covering and having an area at least equal to the total safety valve discharge area. Housing cover must have suitable stop to prevent cover striking loading or unloading connections and be hinged on one side only with approved riveted pin or rod with nuts and cotters. Openings in wall of housing must be equipped with screw plugs or other closures.

§ 78.288–12 *Venting, loading and unloading valves, gauging and sampling device and thermometer well.* (a) Venting, loading and unloading valves must be of approved type, made of metal not subject to rapid deterioration by lading, and must withstand a pressure of 500 pounds per square inch without leakage. The valves must be directly bolted to seatings on manway cover. Pipe connections of valves must be closed with approved screw plugs chained or otherwise fastened to prevent misplacement.

(b) The interior pipes of the loading and unloading valves, except as prescribed in paragraphs (d) and (e) of this section, may be equipped with excess flow valves of an approved design.

(c) Gauging device, sampling valve and thermometer well are not specification requirements. When used, they must be of approved design, made of metal not subject to rapid deterioration by the lading, and must withstand a pressure of 500 pounds per square inch without leakage. Interior pipes of the gauging device and sampling valve, except as prescribed in paragraph (d) of this section, may be equipped with excess flow valves of an approved design. Interior pipe of thermometer well must be anchored in an approved manner to prevent breakage due to vibration. The thermometer well must be closed by an approved valve attached close to the manway cover and closed by a screw plug. Other approved arrangements that permit testing thermometer well for leaks without complete removal of the closure may be used.

(d) Tanks for use in the transportation of liquefied flammable gases must have the interior pipes of the loading and unloading valves, gauging device and sampling valve equipped with excess flow valves of an approved design.

(e) Tanks used for the transportation of chlorine must have the interior pipes of the liquid lines equipped with excess flow valves of an approved design.

§ 78.288–13 *Safety valves.* (a) The tank must be equipped with one or more safety valves of approved design made of metal not subject to rapid deterioration by the lading and mounted on manway cover. The total valve discharge capacity must be sufficient to prevent building up of pressure in tank in excess of 375 pounds per square inch.

(b) The safety valves must be set to open at a pressure of not exceeding 375 pounds per square inch. (For tolerance see § 78.288–17 (a).)

(c) Tank for use in the transportation of liquefied carbon dioxide must be equipped with one safety valve of approved design set to open at a pressure not exceeding 375 pounds per square inch and one frangible disc device of approved design set to function at a pressure less than the test pressure of the tank. The discharge capacity of each of these safety devices must be sufficient to prevent building up of pressure in tank in excess of 375 pounds per square inch. Tanks must also be equipped with two pressure-regulating valves of approved design, one set to open at 300 pounds per square inch pressure and one set to open at 333 pounds per square inch pressure. Each pressure-regulating valve and safety device must have its final discharge piped to the outside of the protective housing.

§ 78.288–14 *Fixtures, reinforcements and attachments not otherwise specified.* (a) Attachments, other than the anchorage and those mounted on manway nozzle and cover, are prohibited. Heater systems may be applied to exterior of tank by tank bands or other approved methods.

§ 78.288–15 *Closures for openings.* (a) Plugs must be of approved type, with standard pipe thread, and of metal not subject to rapid deterioration by the lading.

§ 78.288–16 *Tests of tanks.* (a) Each tank must be tested, after anchorage is applied and before the tank lagging is applied, by completely filling the tank and manway nozzle with water, or other liquid of similar viscosity, having a temperature which must not exceed 100 degrees Fahrenheit during test, and applying a pressure of 500 pounds per square inch. The tank must hold the prescribed pressure for at least 30 minutes without leakage or evidence of distress.

(b) Calking of welded joints to stop leaks developed during the foregoing tests is prohibited. Repairs in welded joints must be made as prescribed in § 78.288–8 (a).

(c) Tests of exterior heater systems are not a specification requirement.

§ 78.288–17 *Tests of safety valves.* (a) Each valve must be tested by air or gas before being put into service. The valve must open at a pressure not exceeding 375 pounds per square inch and be vapor tight at 300 pounds per square inch, which limiting pressures must not be affected by any auxiliary closures or other combination.

§ 78.288–18 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–105A500–W in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. This mark must also be stenciled on the jacket in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of the company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph, by the

party assembling the completed car. These marks must also be stenciled on the jacket in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(5) Date on which the safety valve was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(6) Water capacity of the tank in pounds stamped plainly and permanently in letters and figures at least ⅜ inch high into the metal of the tank immediately below the mark specified in subparagraphs (2) and (3) of this paragraph. This mark must also be stenciled on the jacket immediately below the dome platform and either directly behind or within 3 feet of the right or left side of ladder, or ladders if there is a ladder on each side of the tank, in letters and figures at least 2 inches high as follows:

WATER CAPACITY
000000 POUNDS

(7) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the jacket in letters at least 1 inch high immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

(8) Tanks made of clad plates must be stenciled on the jacket "_____ (naming material) clad tank." Lined tanks must be stenciled on the jacket "_____ (naming material) lined tank." These marks must be stenciled in letters at least 2 inches high, immediately above the stenciled mark specified in subparagraph (7) of this paragraph.

§ 78.288–19 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

33. Amend entire § 78.289 (19 F. R. 3264, 3265, June 3, 1954) (18 F. R. 3145, June 2, 1953) (17 F. R. 9842, Nov. 1, 1952) (16 F. R. 11785, Nov. 21, 1951) (15 F. R. 8519, 8520, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., 78.289) to read as follows:

§ 78.289 *Specification ICC–105A600–W; lagged fusion-welded steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.289–1 *Type.* (a) Tanks built under this specification must be cylindrical with heads designed convex outward. The tank must be provided with a manway nozzle and cover on top of the tank of sufficient diameter to permit access to the interior of the tank and to provide for the proper mounting of venting, loading, unloading, sampling and safety valves, gauging device, thermometer well, and a protective housing on the cover. Other openings in the tank are prohibited.

§ 78.289–2 *Lagging.* (a) The tank shell and manway nozzle must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.075 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to exterior of tank, the lagging over each heater element may be reduced in thickness equivalent to ½ that required for shell.

(b) Tanks for use in transportation of liquefied carbon dioxide must have tank shell and manway nozzle lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.03 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour; except that the insulation thickness directly over the center sill may be reduced to give a thermal conductance not exceeding 0.04 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour; this reduction is to permit an anchorage which must not exceed 7 inches from top of center sill to bottom of tank.

(c) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.289–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint must be at least 1,500 pounds per square inch.

§ 78.289–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength pounds per square inch;
E = efficiency of longitudinal welded joint = 90 percent.

(b) The minimum thickness of plates must be $^{11}/_{16}$ inch.

(c) The minimum thickness of clad plates, where cladding material has physical properties at least equal to that of the base plate prescribed in § 78.289–6 (a), must be as prescribed in paragraph (b) of this section. Where the cladding material does not have the physical properties at least equal to that of the base plate prescribed in § 78.289–6 (a), minimum thickness of base plate must be as prescribed in paragraph (b) of this section.

§ 78.289–5 *Manway nozzle opening.* (a) Opening in tank for manway nozzle must be reinforced in an approved manner.

§ 78.289–6 *Material.* (a) All plates for tank and manway nozzle must be of open-hearth boiler-plate flange quality steel to an approved specification, the carbon content of which shall not exceed 0.31 percent. These plates may also be clad with other metals, such as nickel.

(b) All plates for tank, manway nozzle and anchorage for tanks used in the transportation of liquefied carbon dioxide must be made of steel to an approved specification suitable for service at low temperatures.

(c) All castings used for fittings or attachments to tank must be made of material to an approved specification. The use of cast iron is prohibited.

(d) All external projections must be made of materials specified herein.

(e) Lining or interior coating is not a specification requirement. If applied, it must be approved as to material.

§ 78.289–7 *Tank heads.* (a) The tank head shape shall be an ellipsoid of revolution in which the major axis shall equal the diameter of the shell and the minor axis shall be ½ of the major axis.

§ 78.289–8 *Welding.* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with requirements of AAR Welding Code Appendix "W".

§ 78.289–9 *Stress relieving.* (a) All welding of the tank shell and of attachments welded directly thereto must be stress-relieved as a unit.

§ 78.289–10 *Tank mounting.* (a) The manner in which the tank is sup-

ported on and securely attached to the car structure must be approved.

(b) The use of rivets as a means of securing anchor to the tank is prohibited.

§ 78.289–11 *Manway nozzle, cover and protective housing.* (a) Manway nozzle must be of forged or rolled steel at least 18 inches inside diameter. Manway nozzle must be of approved design and attached to tank by fusion-welding. Fusion welding for securing this attachment in place must be of the double-welded butt joint type or double full-fillet lap joint type.

(b) Manway cover must be of forged or rolled steel at least 2¼ inches thick machined to approved dimensions. Manway cover must be attached to manway nozzle by through or stud bolts not entering tank.

(c) The shearing value of the bolts attaching protective housing to manway cover must not exceed 70 percent of shearing value of bolts attaching manway cover to manway nozzle.

(d) All joints between manway cover and manway nozzle, and between manway cover and valves or other appurtenances mounted thereon, must be made tight against vapor pressure.

(e) Protective housing of cast or fabricated steel must be bolted to manway cover. Housing must be equipped with a suitable metal cover that can be securely closed. Housing cover on tanks used for the transportation of liquefied flammable gases must be provided with an opening equipped with an approved weather-proof covering and having an area at least equal to the total safety valve discharge area. Housing cover must have suitable stop to prevent cover striking loading or unloading connections and be hinged on one side only with approved riveted pin or rod with nuts and cotters. Openings in wall of housing must be equipped with screw plugs or other closures.

§ 78.289–12 *Venting, loading and unloading valves, gauging and sampling device and thermometer well.* (a) Venting, loading and unloading valves must be of approved type, made of metal not subject to rapid deterioration by lading, and must withstand a pressure of 600 pounds per square inch without leakage. The valves must be directly bolted to seatings on manway cover. Pipe connections of the valves must be closed with approved screw plugs chained or otherwise fastened to prevent misplacement.

(b) The interior pipes of the loading and unloading valves, except as prescribed in paragraphs (d) and (e) of this section, may be equipped with excess flow valves of an approved design.

(c) Gauging device, sampling valve and thermometer well are not specification requirements. When used, they must be of approved design, made of metal not subject to rapid deterioration by the lading, and must withstand a pressure of 600 pounds per square inch without leakage. Interior pipes of the gauging device and sampling valve, except as prescribed in paragraph (d) of this section, may be equipped with excess flow valves of an approved design. Interior pipe of thermometer well must be anchored in an approved manner to prevent breakage due to vibration. The thermometer well must be closed by an approved valve attached close to the manway cover and closed by a screw plug. Other approved arrangements that permit testing thermometer well for leaks without complete removal of the closure may be used.

(d) Tanks for use in the transportation of liquefied flammable gases must have the interior pipes of the loading and unloading valves, gauging device and sampling valve eqiupped with excess flow valves of an approved design.

(e) Tanks used for the transportation of chlorine must have the interior pipes of the liquid lines equipped with excess flow valves of an approved design.

§ 78.289–13 *Safety valves.* (a) The tank must be equipped with one or more safety valves of approved design made of metal not subject to rapid deterioration by the lading and mounted on manway cover. The total valve discharge capacity must be sufficient to prevent building up of pressure in tank in excess of 450 pounds per square inch.

(b) The safety valves must be set to open at a pressure of not exceeding 450 pounds per square inch. (For tolerance see § 78.289–17 (a).)

(c) Tanks for use in the transportation of liquefied carbon dioxide must be equipped with one safety valve of approved design set to open at a pressure not exceeding 450 pounds per square inch and one frangible disc device of approved design set to function at a pressure less than the test pressure of the tank. The discharge capacity of each of these safety devices must be sufficient to prevent building up of pressure in tank in excess of 450 pounds per square inch. Tanks must also be equipped with two pressure-regulating valves of approved design, one set to open at 360 pounds per square inch pressure and one set to open at 400 pounds per square inch pressure. Each pressure-regulating valve and safety device must have its final discharge piped to the outside of the protective housing.

§ 78.289–14 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) Attachments, other than the anchorage and those mounted on the manway nozzle and cover, are prohibited. Heater systems may be applied to exterior of tank by tank bands or other approved method.

§ 78.289–15 *Closures for openings.* (a) Plugs must be of approved type, with standard pipe thread, and of metal not subject to rapid deterioration by the lading.

§ 78.289–16 *Tests of tanks.* (a) Each tank must be tested, after anchorage is applied and before the tank lagging is applied, by completely filling the tank and manway nozzle with water, or other liquid of similar viscosity, having a temperature which must not exceed 100 degrees Fahrenheit during test, and applying a pressure of 600 pounds per square inch. The tank must hold the prescribed pressure for at least 30 minutes without leakage or evidence of distress.

(b) Calking of welded joints to stop leaks developed during the foregoing tests prohibited. Repairs in welded joints must be made as prescribed in § 78.289–8 (a).

(c) Tests of exterior heater systems are not a specification requirement.

§ 78.289–17 *Tests of safety valves.* (a) Each valve must be tested by air or gas before being put into service. The valve must open at a pressure not exceeding 450 pounds per square inch and be vapor tight at 360 pounds per square inch, which limiting pressures must not be affected by any auxiliary closure or other combination.

§ 78.289–18 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–105A600–W in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. This mark must also be stenciled on the jacket in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of the company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph, by the party assembling the completed car. These marks must also be stenciled on the jacket in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (2) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(6) Water capacity of the tank in pounds stamped plainly and permanently in letters and figures at least ⅜ inch high into the metal of the tank immediately below the mark specified in subparagraphs (2) and (3) of this paragraph. This mark must also be stenciled on the jacket immediately below the dome platform and either directly behind or within 3 feet of the right or left side of ladder, or ladders if there is a ladder on each side of the tank, in letters and figures at least 2 inches high as follows:

WATER CAPACITY
000000 POUNDS

(7) When a tank car and its appurtenances are designed and authorized

for the transportation of a particular commodity only, the name of that commodity followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the jacket in letters at least 1 inch high immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

(8) Tanks made of clad plates must be stenciled on the jacket "_____ (naming material) clad tank." Lined tanks must be stenciled on the jacket "_____ (naming material) lined tank." These marks must be stenciled in letters at least 2 inches high, immediately above the stenciled mark specified in subparagraph (7) of this paragraph.

§ 78.289–19 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

34. Cancel entire § 78.290 (15 F. R. 8520 to 8523, Dec. 2, 1950) (49 CFR 78.290, 1950 Rev.)

35. Amend entire § 78.291 (19 F. R. 3265, June 3, 1954) (18 F. R. 5278, Sept. 1, 1953) (18 F. R. 806, Feb. 7, 1953) (17 F. R. 9842, Nov. 1, 1952) (16 F. R. 5330 to 5334, June 6, 1951) (16 F. R. 5768, June 16, 1951) (49 CFR 1950 Rev., 1954 Supp., 78.291) to read as follows:

§ 78.291 *Specification ICC–103AL–W; fusion-welded aluminum tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification, it means approval by the Association of American Railroads Committee on Tank Cars, as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.291–1 *Type.* (a) Tanks built under this specification must by cylindri- under this specification must be cylindri- and must have at least one expansion dome with manway, and such other external projections as are prescribed herein.

§ 78.291–2 *Lagging.* (a) Not a specification requirement. If applied, the tank shell and expension dome must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weathertight. When heater systems are attached to the exterior of tank, the lagging over each heater element may be reduced in thickness.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.291–3 *Bursting pressure.* (a) The calculated bursting pressure based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint, must be at least 240 pounds per square inch.

§ 78.291–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula, but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t=\frac{Pd}{2SE}$$

where
t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch as follows:

ASTM B–178 Alloy 996A = 9,500 p. s. i.
ASTM B–178 Alloy 990A = 11,000 p. s. i.
ASTM B–178 Alloy M1A = 14,000 p. s. i.
ASTM B–178 Alloy GR20A = 25,000 p. s. i.
ASTM B–178 Alloy GS11A = 24,000 p. s. i.
ASTM B–178 Alloy GR40A = 30,000 p. s. i.

E = efficiency of longitudinal welded joint = 90 percent.

(b) The minimum thickness of plates must be as follows:

	Inch
Bottom sheet	⅝
Shell sheet	½
Expansion dome sheet	½
Tank head (dished)	⅝
Tank head (ellipsoidal)	½
Expansion dome head (dished or ellipsoidal)	½

(c) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal welded joint, including welds, above the cradle.

(d) For tanks built of one piece cylindrical sections, the thickness specified for bottom sheet must apply to the entire cylindrical shell.

(e) The thickness of a dished tank head must be determined by the following formula, but shall in no case be less than that specified in paragaph (b) of this section:

$$t=\frac{5PL}{6SE}$$

where
t = thickness of plate in inches;
P = calculated bursting pressure, pounds per square inch;
L = main inside radius to which head is dished measured on concave side of head in inches;
S = minimum ultimate tensile strength in pounds per square inch (see paragraph (a) of this section);
E = efficiency of welded joint.

When head is formed from one piece, the efficiency may be considered as 100 percent.

(f) The thickness of an ellipsoidal head shall be determined by the following formula:

$$t=\frac{Pd}{2SE}$$

where
t = thickness of plate in inches;
P = calculated bursting pressure, pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch (see paragraph (a) of this section);
E = efficiency of welded joint.

When head is formed from one piece, the efficiency may be considered as 100 percent.

§ 78.291–5 *Material.* (a) All plates for tank and expansion dome must be of an aluminum alloy to an approved specification and be suitable for fusion welding and not subject to rapid deterioration by the lading.

(b) Aluminum alloy castings for fittings or attachment to tank must be made of material to an approved specification.

(c) All rivets must be made of aluminum alloy to an approved specification They must be handled and driven in a manner that will insure the requisite strength.

(d) All external projections which may be in contact with the lading must be made of material specified herein.

§ 78.291–6 *Tank heads.* (a) Tank heads must be of approved contour, and may be dished or ellipsoidal for pressure on concave side.

(b) Dished heads must have main inside radius not exceeding 10 feet. The inside knuckle radius must not be less than 5 inches.

(c) Ellipsoidal tank head shall be an ellipsoid of revolution in which the major axis shall equal the diameter of the shell and the minor axis shall be ½ the major axis.

§ 78.291–7 *Welding.* (a) All joints must be fusion welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion welding to be performed by fabricators certified by the Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion welding in accordance with the requirements of AAR Welding Code, Appendix "W".

§ 78.291–8 *Manway ring, safety valve flange, and bottom outlet nozzle flange or other attachments.* (a) These attachments may be riveted or fusion welded. Riveted joints must be made metal to metal without interposition of other material. Rivets must be calked inside. For computing rivet areas the effective diameter of a driven rivet is the diameter of its reamed hole, which hole must in no case exceed nominal diameter of rivet by more than 1/16 inch. Use of rivets of less than ⅝" nominal diameter prohibited. Fusion welding for securing these attachments in place must be of double welded butt joint type or double full-fillet lap joint type.

(b) *Calking.* All attachments riveted to the tank must have the rivets calked and the joints formed by attachments calked on the inside of tank.

§ 78.291–9 *Stress relieving.* (a) Not a specification requirement.

§ 78.291–10 *Tank mounting.* (a) The manner in which tank is supported on and securely attached to the car structure must be approved.

(b) The use of rivets as a means of securing anchor to the tank is prohibited.

§ 78.291–11 *Expansion dome.* (a) The expansion dome must have a capacity, measured from the inside top of shell of tank to the inside top of dome or bottom of any vent pipe projecting inside of dome, of at least two per cent of the total capacity of the tank and dome combined, except that when safety valve or vent is applied to side of dome, the effective capacity of dome must be measured from top of safety valve or safety vent opening in the side of dome to inside top of shell of tank.

(b) The opening in manway ring must be at least 16 inches in diameter. The opening in the tank shell within the dome must be at least 29 inches in diameter. When the opening in the tank shell exceeds 30 inches in diameter, the opening must be reinforced in an approved manner. When the opening in the tank shell is less than the inside diameter of the dome, and the dome pocket is not closed off in an approved manner, dome pocket drain holes must be provided in the tank shell with nipples projecting inside the tank at least 1 inch.

(c) The dome head must be of approved contour. The dome head must be of an aluminum alloy.

(d) The dome shell thickness shall be calculated by the formula in § 78.291–4 (a).

(e) The dome head, if dished, must be dished to a radius not exceeding 96 inches. Thickness of the dished dome head shall be calculated by the formula in § 78.291–4 (e).

(f) Dome head may be an ellipsoid of revolution in which the major axis shall be equal to the diameter of the dome shell and the minor axis shall be one-half of the major axis. The thickness in this case shall be determined by using formula of the main head. (See § 78.291–4 (f).)

(g) Tank shell shall be reinforced by the addition of a plate equal to or greater than shell in thickness and the cross sectional area shall exceed metal removed for dome opening, or tank shell shall be reinforced by a seamless saddle plate equal to or greater than shell in thickness and butt welded to tank shell. The reinforcing saddle plate shall be provided with a flued opening having a vertical flange of the diameter of the dome for butt welding shell of dome to the flange. The reinforcing saddle plate shall extend about the dome a distance measured along shell of tank at least equal to the extension at top of tank. Other approved designs may be used.

§ 78.291–12 *Closure for manway.* (a) The manway cover must be of approved type and designed to make it impossible to remove the cover while the interior of the tank is subjected to pressure.

(b) Manway covers must be made of cast, forged or fabricated aluminum alloys or other approved materials. Manway rings must be made of cast, forged or fabricated aluminum alloys and must be of good weldable quality in conjunction with the metal of dome.

(c) All covers not hinged to tank must be attached to outside of the dome head, by at least ⅜ inch chain or its equivalent.

(d) All joints between manway covers and their seats must be made tight against leakage of vapor and liquid by use of gaskets of suitable material.

§ 78.291–13 *Gauging, bottom outlet valve operating, venting, loading, and unloading, and air inlet devices extending through domes of tanks.* (a) Not specification requirements. When installed, these devices, including their valves, must be of approved designs and must be made of materials not subject to rapid deterioration by the lading. These devices including their valves must be provided with a protective housing. Unloading pipe must be securely anchored with the tank. Provision must be made for closing pipe connections of valves.

§ 78.291–14 *Bottom outlets.* (a) The bottom outlet, when installed must be made of material not subject to rapid deterioration by the lading, be of approved construction, and be provided with a valve at its upper end and a liquid-tight closure at its lower end.

(b) The valve operating mechanism and outlet nozzle constructions must be such as to insure against unseating of valve due to stresses or shocks incident to transportation.

(c) Bottom outlet nozzle may be cast, fabricated or forged metal. The nozzle must be of good weldable quality in conjunction with metal of tank.

(d) To provide for the attachment of standard unloading connections, the bottom of the main portion of the outlet valve nozzle, or some fixed attachment thereto, must be equipped with a flange or with external Unified Form Threads, 4 threads to the inch.

(e) For outlet nozzles that project six inches or more from shell of tank a "V" groove must be cut (not cast) in the upper part of outlet valve nozzle at a point immediately below the lowest part of valve to a depth that will leave thickness of nozzle wall at the root of the "V" not over ⅜ inch. In the case of steam jacketed outlet nozzles this groove must be below the steam chamber but above the bottom of center sill construction. Where outlet nozzle is not a single piece, arrangement must be made to provide the equivalent of the breakage groove.

(f) The flange on the outlet nozzle must be of a thickness which will prevent distortion of the valve seat or valve by any change in contour of the shell resulting from expansion of lading, or other causes, and which will insure that accidental breakage of the outlet nozzle will occur at or below the "V" groove.

(g) The valve must have no wings or stem projecting below the "V" groove in the outlet nozzle. The valve and seat must be readily accessible or removable for repairs, including grinding.

(h) The valve operating mechanism must have means for compensating for variation in the vertical diameter of the tank produced by expansion, weight of the liquid contents, or other causes, and should operate from the interior of the tank, but in the event the rod is carried through the dome, leakage must be prevented by packing in stuffing box and cap nut.

(i) In no case must extreme projection of bottom outlet equipment extend to within 12 inches above top of rail. All bottom outlet reducers and closures and their attachments must be secured to car by at least ⅜ inch chain or its equivalent, except that outlet closure plugs may be attached by ¼ inch chain. When the bottom outlet closure is of the combination cap and valve type, the pipe connection to the valve must be closed by a plug or cap.

§ 78.291–15 *Safety valves.* (a) The tank must be equipped with one or more safety valves of approved design mounted on expansion dome. Total valve discharge capacity must be sufficient to prevent building up of pressure in the tank in excess of 45 pounds per square inch.

(b) One safety valve must be provided for each tank of 6,650 gallons capacity or less, and two safety valves for each tank of over 6,650 gallons capacity.

(c) Each safety valve must be set to open at a pressure of 35 pounds per square inch and be vapor-tight at 28 pounds per square inch. (For tolerance see § 78.291–20 (a).)

(d) Tanks used for the transportation of corrosive liquids, flammable solids, oxidizing materials or poisonous liquids or solids, class B, need not be equipped with safety valves, but if not so equipped must have one safety vent made of approved material at least 1¾ inches inside diameter closed with a frangible disc of suitable material, of a thickness that will rupture at a pressure not exceeding 45 pounds per square inch. Means for holding in place must be such as to prevent distortion or damage to disc when applied. Safety vent closure must be chained or otherwise fastened to prevent misplacement. All tanks equipped with vents must be stenciled "Not For Flammable Liquids".

(e) Safety valve or safety vent flanges, if welded to dome, must be of cast, forged or fabricated metal and be of good weldable quality in conjunction with metal of dome.

§ 78.291–16 *Fixtures, reinforcements and attachments not otherwise specified.* (a) All attachments to tank and dome must be applied by approved means. When attachments are riveted the edges of plates must be beveled so that the angle of the calking edge will be between 60 and 70 degrees with the flat surface of the attachment. The extreme calking edge distance, measured from center line of rivet hole, must be at least 1½ times the diameter of the hole and not more than that distance plus ¼ inch. The joints formed by attachment of all riveted external projections must be calked on the inside. All rivet heads on the inside and outside of tank and dome must be calked. Split calking is prohibited. Interior heater systems, when installed, must be so constructed that the breaking off of their external connections

will not cause leakage of contents of tank.

§ 78.291–17 *Interior heater systems.* (a) See §§ 78.260 and 78.261, heater systems.

(b) Interior heater system and plug flanges, if welded to tank or dome, must be of cast, forged, or fabricated metal and be of good weldable quality in conjunction with metal of tank or dome.

§ 78.291–18 *Closures for openings.* (a) All plugs must be solid, of cast, rolled or forged metal of approved material with standard pipe thread, of a length which will screw at least six threads inside the face of fitting or tank. Plugs when inserted from the outside of tank must have the letter "S" at least ⅜ inch in size stamped with steel stamp or cast on the outside surface to indicate the plug is solid.

§ 78.291–19 *Test of tanks.* (a) Each tank must be tested, before being put into service, by completely filling tank and dome with water, or other liquid having similar viscosity, of a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 60 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All rivets and closures, except safety valves or safety vents, must be in place while test is made.

(b) If tanks are to be lagged, the test of tank must be made before lagging is applied.

(c) Calking of welded joints to stop leaks developed during the foregoing tests prohibited. Repairs in welded joints must be made as prescribed in § 78.291–7 (a).

(d) Test of interior heater systems. Before interior heater systems are placed in service, they must be tested with hydrostatic pressure and must be tight at 200 pounds per square inch.

§ 78.291–20 *Tests of safety valves.* (a) Each valve must be tested, before being put into service, by attaching to an air line and applying pressure. The valve must not leak below 28 pounds pressure. The valve must open at the pressure prescribed in § 78.291–15 (c), with a plus or minus 3 pounds.

§ 78.291–21 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–103AL–W and specification number of material used in tank shell and expansion dome in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. ICC–103AL–W must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

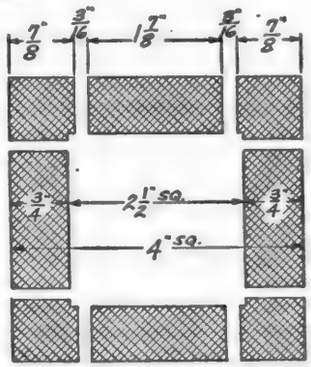
(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph by the party assembling the completed car. These marks must also be stenciled on the tank, or jacket if lagged, in letters and figures at least two inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(6) Date on which interior heater systems were last tested, pressure to which tested, place where test was made, and by whom, stenciled on tank, or jacket if lagged.

(7) Identification mark, illustrated herein, for approved manway closure must be stenciled on each side of dome, or jacket if lagged, in line with the ladders and in a color contrasting to color of dome.



Manhole Closure Identification Mark
(Reduced size)

(8) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the tank, or jacket if lagged, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.291–22 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to the car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and numbers of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and the car owner.

36. Amend entire § 78.292 (19 F. R. 3265, June 3, 1954) (16 F. R. 5334, 5335, June 6, 1951) (16 F. R. 5768, June 16, 1951) (49 CFR 1950 Rev., 1954 Supp., 78.292) to read as follows:

§ 78.292 *Specification ICC–103A–AL–W; fusion-welded aluminum tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification, it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.292–1 *Type.* (a) Tanks built under this specification must be cylindrical, with heads designed convex outward, and must have at least one expansion dome with manway, and such other external projections as are prescribed herein.

§ 78.292–2 *Lagging.* (a) Not a specification requirement. If applied, the tank shell and expansion dome must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to the exterior of tank, the lagging over each heater element may be reduced in thickness.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.292–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint, must be at least 240 pounds per square inch.

§ 78.292–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula, but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t = \frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength pounds per square inch as follows:

ASTM B–178 Alloy 996A = 9,500 p. s. i.
ASTM B–178 Alloy 990A = 11,000 p. s. i.
ASTM B–178 Alloy M1A = 14,000 p. s. i.
ASTM B–178 Alloy GR20A = 25,000 p. s. i.
ASTM B–178 Alloy GS11A = 24,000 p. s. i.
ASTM B–178 Alloy GR40A = 30,000 p. s. i.

E = efficiency of longitudinal welded joint = 90 percent.

(b) The minimum thickness of plates must be as follows:

	Inch
Bottom sheet	5/8
Shell sheet	1/2
Expansion dome sheet	1/2
Tank head (dished)	5/8
Tank head (ellipsoidal)	1/2
Expansion dome head (dished or ellipsoidal)	1/2

(c) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal welded joint, including welds, above the cradle.

(d) For tanks built of one piece cylindrical sections, the thickness specified for bottom sheet must apply to the entire cylindrical shell.

(e) The thickness of a dished tank head must be determined by the following formula but shall in no case be less than that specified in paragraph (b) of this section:

$$t=\frac{5PL}{6SE}$$

where

t = thickness of plate in inches;
P = calculated bursting pressure pounds per square inch;
L = main inside radius to which head is dished measured on concave side of head in inches;
S = minimum ultimate tensile strength in pounds per square inch (see paragraph (a) of this section;
E = efficiency of welded joint to shell = 100 percent.

(f) The thickness of an ellipsoidal head shall be determined by the following formula:

$$t=\frac{Pd}{2SE}$$

where

t = thickness of plate in inches;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch (see paragraph (a) of this section).
E = efficiency of welded joint to shell = 100 percent.

§ 78.292–5 *Material.* (a) All plates for tank and expansion dome must be made of an aluminum alloy to an approved specification and be suitable for fusion welding and not subject to rapid deterioration by the lading.

(b) Aluminum alloy castings used for fittings or attachment to tank must be made of material to an approved specification.

(c) All rivets must be of aluminum alloy to an approved specification. They must be handled and driven in a manner that will insure the requisite strength.

(d) All external projections which may be in contact with the lading must be made of material specified herein.

§ 78.292–6 *Tank heads.* (a) Tank heads must be of approved contour, and may be dished or ellipsoidal for pressure on concave side.

(b) Dished heads must have main inside radius not exceeding 10 feet. The inside knuckle radius must not be less than 5 inches.

(c) Ellipsoidal tank head shall be an ellipsoid of revolution in which the major axis shall equal the diameter of the shell and the minor axis shall be ½ of the major axis.

§ 78.292–7 *Welding.* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by the Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with the requirements of AAR Welding Code Appendix "W".

§ 78.292–8 *Manway ring, safety valve flange and bottom outlet nozzle flange or other attachments.* (a) These attachments may be riveted or fusion-welded. Riveted joints must be made metal to metal without interposition of other material. Rivets must be calked inside and outside. For computing rivet areas, the effective diameter of a driven rivet is the diameter of its reamed hole, which hole must in no case exceed nominal diameter of rivet by more than 1/16 inch. Use of rivets of less than 5/8 inch nominal diameter prohibited. Fusion-welding for securing these attachments in place must be of double welded butt joint type or double full-fillet lap joint type.

(b) *Calking.* All attachments riveted to tank must have the rivets and the joints formed by attachments calked on the inside of tank.

§ 78.292–9 *Stress-relieving.* (a) Not a specification requirement.

§ 78.292–10 *Tank mounting.* (a) The manner in which the tank is supported on and securely attached to the car structure must be approved.

(b) The use of rivets as a means of securing the anchor to the tank is prohibited.

§ 78.292–11 *Expansion dome.* (a) The expansion dome must have a capacity, measured from the inside top of shell of tank to the inside top of dome or bottom of any vent pipe projecting inside of dome, of at least one percent of the total capacity of the tank and dome combined, except that when safety vent is applied to side of dome, the effective capacity of dome must be measured from top of safety vent opening in the side of dome to inside top of shell of tank.

(b) The opening in manway ring must be at least 16 inches in diameter. The opening in the tank shell within the dome must be at least 29 inches in diameter. When the opening in the tank shell exceeds 30 inches in diameter the opening must be reinforced in an approved manner. When the opening in the tank shell is less than the inside diameter of the dome, and the dome pocket is not closed off in an approved manner, dome pocket drain holes must be provided in the tank shell with nipples projecting inside the tank at least 1 inch.

(c) The dome head must be of approved contour. The dome head must be of an aluminum alloy.

(d) The dome shell thickness shall be calculated by the formula in § 78.292–4 (e).

(e) The dome head, if dished, must be dished to a radius not exceeding 96 inches. Thickness of the dished dome head shall be calculated by the formula in § 78.292–4 (e).

(f) Dome head may be an ellipsoid of revolution in which the major axis shall be equal to the diameter of the dome shell and the minor axis shall be ½ of the major axis. The thickness in this case shall be determined by using formula of the main head. (See § 78.292–4 (f).)

(g) Tank shell shall be reinforced by the addition of a plate equal to or greater than shell in thickness and the cross sectional area shall exceed metal removed from dome opening, or tank shell shall be reinforced by a seamless saddle plate equal to or greater than shell in thickness and butt welded to tank shell. The reinforcing saddle plate shall be provided with a flued opening having a vertical flange of the diameter of the dome for butt welding shell of dome flange. The reinforcing saddle plate shall extend about the dome a distance measured along shell of tank at least equal to the extension at top of tank. Other approved designs may be used.

§ 78.292–12 *Closure for manway.* (a) The manway cover must be of approved type and designed to provide a secure closure of the manway.

(b) Manway covers must be of cast, forged or fabricated aluminum alloys or other approved materials. Manway rings must be made of cast, forged or fabricated aluminum alloys and must be of good weldable quality in conjunction with the metal of dome.

(c) Chains, if used to attach manway covers to outside of dome head, must be at least 3/8 inch or its equivalent.

(d) All joints between manway covers and their seats must be made tight against leakage of vapor and liquid by use of gaskets of suitable material.

§ 78.292–13 *Gauging, venting, loading and unloading, and air inlet devices extending through domes of tanks.* (a) When installed these devices must be of an approved design and made of materials not subject to rapid deterioration by the lading, and must be tightly closed. Protective housing not required, except as prescribed in paragraph (b) of this section. Unloading pipe must be securely anchored within the tank.

(b) When the characteristics of the commodity for which the car is authorized are such that these devices must be equipped with valves to provide for the loading and unloading of the contents, these devices including valves must be of an approved design and be provided with a protective housing. Provision must be made for closing pipe connections of valves.

§ 78.292–14 *Bottom outlets.* (a) Bottom outlet is prohibited, but tank may be equipped with a bottom washout nozzle of aluminum alloy not subject to rapid deterioration by the lading, which must be of approved construction com-

plying with the following requirements:

(1) The construction and closure of the bottom washout nozzle must be such that it is liquid tight and should the nozzle be broken, loss of contents will not occur.

(2) The extreme projection of the bottom washout nozzle must be at least 12 inches above the top of rail.

(3) Bottom washout nozzle may be cast, fabricated or forged metal. The nozzle must be of good weldable quality in conjunction with metal of tank.

(4) For bottom washout nozzles that project 6 inches or more from shell of tank, a "V" groove must be cut (not cast) in the upper part of bottom washout nozzle at a point immediately below lowest part of inside closure seat to a depth that will leave thickness of nozzle at the root of the "V" not over ⅜ inch. Where bottom washout nozzle is not a single piece, arrangement must be made to provide the equivalent of the breakage groove.

(5) The flange on the bottom washout nozzle must be of a thickness which will prevent distortion of the inside closure seat or closure casting by any change in contour of the shell, resulting from expansion of lading, or other causes, and which will insure that accidental breakage of the washout nozzle will occur at or below the "V" groove.

(6) The closure casting must not project below the "V" groove in the washout nozzle. The closure casting and seat must be readily accessible for repairs, including grinding.

§ 78.292–15 *Safety devices.* (a) The tank must be equipped with a safety valve or safety vent at least 1¾ inches inside diameter mounted on top of expansion dome. Total valve discharge capacity must be sufficient to prevent building up pressure in tank in excess of 45 pounds per square inch.

(b) At least one safety valve or vent must be provided for each tank.

(c) The safety valve, if used, must be set to open at a pressure of 35 pounds per square inch and be vapor tight at 28 pounds per square inch. (For tolerance see § 78.292–20 (a).)

(d) If tank is equipped with a safety vent it must be closed with a frangible disc of suitable material of a thickness that will rupture at a pressure not exceeding 45 pounds per square inch. Means for holding disc in place must be such as to prevent distortion or damage to disc when applied. Safety vent closure must be chained or otherwise fastened to prevent misplacement. Tanks may also be equipped with an approved device that will permit continuous venting.

(e) Safety valve or safety vent flanges, if welded to dome, must be of cast, forged or fabricated metal and be of good weldable quality in conjunction with metal of dome.

§ 78.292–16 *Fixtures, reinforcements and attachments not otherwise specified.* (a) All attachments to tank and dome must be applied by approved means. When attachments are riveted, the edges of plates must be beveled so that the angle of the calking edge will be between 60 and 70 degrees with the flat surface of the attachment. The extreme calking edge distance, measured from center line of rivet hole, must be at least 1½ times the diameter of the hole and not more than that distance plus ¼ inch. The joints formed by attachment of all riveted external projections must be calked on the inside. All rivet heads on the inside and outside of tank and dome must be calked. Split calking is prohibited. Interior heater systems, when installed, must be so constructed that the breaking off of their external connections will not cause leakage of contents of tank.

§ 78.292–17 *Interior heating systems.* (a) See §§ 78.260 and 78.261, heater systems.

(b) Interior heater system and plug flanges, if welded to tank or dome, must be of cast, forged or fabricated metal and be of good weldable quality in conjunction with metal of tank or dome.

§ 78.292–18 *Closures for openings.* (a) All plugs must be solid, of cast, rolled or forged metal of approved material with standard pipe thread, of a length which will screw at least 6 threads inside the face of fitting or tank. Plugs when inserted from the outside of tank must have the letter "S" at least ⅜ inch in size stamped with steel stamp or cast on the outside surface to indicate the plug is solid.

§ 78.292–19 *Test of tanks.* (a) Each tank must be tested, before being put into service, by completely filling tank and dome with water, or other liquid having similar viscosity, of a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 60 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All rivets and closures except safety valves or safety vents, must be in place while test is made.

(b) If tanks are to be lagged, the test of tank must be made before lagging is applied.

(c) Calking of welded joints to stop leaks developed during the foregoing test is prohibited. Repairs in welded joints must be made as prescribed in § 78.292–7 (a).

(d) Test of interior heater systems. Before interior heater systems are placed in service, they must be tested with hydrostatic pressure and must be tight at 200 pounds per square inch.

§ 78.292–20 *Tests of safety valves.* (a) Valve must be tested before being put into service, by attaching to an air line and applying pressure. The valve must open at the pressure prescribed in § 78.292–15 (c) with a tolerance of minus 3 pounds.

§ 78.292–21 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–103A–AL–W and specification number of material used in tank shell and expansion dome in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. ICC–103A–AL–W must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of company and dates of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph, by the party assembling the completed car. These marks must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank or jacket if lagged.

(6) Date on which interior heater systems were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(7) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the tank, or jacket if lagged, in letters at least 1 inch high immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.292–22 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and numbers of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

37. Amend entire § 78.293 (18 F. R. 806, Feb. 7, 1953) (16 F. R. 9381, Sept. 15, 1951) (16 F. R. 5335 to 5341, June 6, 1951) (16 F. R. 5768, June 16, 1951) (49 CFR

1950 Rev., 1954 Supp., 78.293) to read as follows:

§ 78.293 *Specification ICC–110A500–W; metallic arc fusion-welded steel tanks to be mounted on a car.* (a) Wherever the word "approved" is used in this specification, it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.293–1 *Type and general requirements.* (a) Tanks built under this specification must be cylindrical with heads designed convex outward. All operating fittings must be located in one of the heads, and no openings of any sort are permitted in the cylindrical shell. Tanks must be securely attached to the car structure in a manner such that they may be removed for filling by the consignor and emptying by the consignee. Each tank must have a capacity of at least 1,600 pounds of water and not more than 2,600 pounds of water.

(b) The tanks must be fabricated by approved methods.

(c) For tanks made in foreign countries, a chemical analysis of material and all tests as specified must be carried out within the limits of the United States under supervision of a competent and disinterested inspector.

§ 78.293–2 *Thickness of plates.* (a) The wall thickness of the cylindrical portion of the tank must not be less than $^{11}/_{32}$ inch and, in addition, must not be less than that calculated by the following formula:

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure in pounds per square inch, 1,250 pounds per square inch gauge minimum;
d = inside diameter in inches;
S = minimum specified ultimate tensile strength of plate in pounds per square inch;
E = efficiency of butt-welded joint = 90 percent.

§ 78.293–3 *Material.* (a) All plates for the tank must be made of open-hearth or electric furnace boiler plate steel to an approved specification, the carbon content of which shall not exceed 0.31 percent. These plates may also be clad with other metals, such as nickel.

(b) All plates must have their heat number and the name or brand of the manufacturer legibly stamped on them at the rolling mill.

(c) Lining is not a specification requirement. If applied, must be approved as to material and method of application.

§ 78.293–4 *Tank heads.* (a) The tank heads must be hot pressed with a straight flange of at least 1½ inches and with a radius of dish not greater than the diameter of the tank. The inside knuckle radius must not be less than 6 percent of the inside diameter of the vessel.

(b) The heads must be of one piece and either designed torispherical or ellipsoidal in form and designed convex outward. The thickness of the heads shall not be less than that determined by the following formula:

$$t=\frac{5PL}{6SE}$$

(2) For ellipsoidal heads having a ratio of major to minor axis of 2 to 1

$$t=\frac{Pd}{2SE}$$

where

t = minimum thickness in inches of finished head;
P = minimum bursting pressure = 1,250 pounds per square inch gauge;
S = minimum specified ultimate tensile strength of plate material in pounds per square inch;
d = inside diameter in inches;
L = inside radius of dish;
E = 1.0 for heads made from one plate.

(c) Threads for openings for tank heads must be American Standard Taper, tapped to gauge, clean cut, even and without checks to insure tight joints. If the thickness of the heads is not sufficient to give an adequate length of thread, the thickness must be increased by welding into the head a plate of sufficient thickness and of the same material as the head. The outside diameter of such plate must be at least twice the nominal diameter of the threaded opening.

§ 78.293–5 *Welding.* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with the requirements of A. A. R. Welding Code Appendix W.

§ 78.293–6 *Stress-relieving.* (a) All welding of the tank and of attachments welded directly thereto must be stress-relieved as a unit.

§ 78.293–7 *Tank mounting.* (a) The manner in which the tanks are supported on and securely attached to the car structure must be approved.

§ 78.293–8 *Protective rings.* (a) A plate ring flange must be welded to the outside of each head and extending a greater distance beyond the head than any fitting or attachment to the head, including the housing referred to in § 78.293–9 (a). This flange must be at least as thick as the shell plates and must slope or curve inward toward the axis such that the diameter at the outboard end is at least 2 inches less than the maximum diameter.

§ 78.293–9 *Protective housing and cover.* (a) All operating fittings shall be located in one head. Valves and other closures of openings in tank heads, except fusible plug vents and drain plugs, must be protected against accidental injury by a detachable cast or pressed shell housing at least $^{3}/_{16}$ inch thick, which must not project beyond the protective ring on the end of the tank and must be securely fastened to the tank head. This housing must be provided with an opening having an area equal to the total safety valve or vent discharge area.

(b) The upper head of tanks mounted vertically on car structure must be completely covered by a light metal cover designed to exclude moisture, cinders, and other foreign matter, and to be displaced by pressure of gas discharged through safety valves or vents.

§ 78.293–10 *Venting, loading and unloading valves.* (a) These valves must be of approved type, made of metal not subject to rapid deterioration by lading, and must withstand a pressure of 500 pounds per square inch without leakage. The valves must be screwed directly into tank heads or attached to tank heads by other approved methods. Provision must be made for closing the pipe connections of the valves.

§ 78.293–11 *Safety valves or vents.* (a) Unless prohibited for type of service in which tank is used, the tank must be equipped with one or more safety valves or vents of approved type, made of metal not subject to rapid deterioration by the lading and screwed directly into tank heads or attached to tank heads by other approved method. The total valve or vent discharge capacity must be sufficient to prevent building up pressure in tank in excess of ¾ the test pressure; when safety vents of the fusible plug type are used, the required discharge capacity must be available in each head.

(b) Tanks mounted vertically on the car structure must have safety valves, or vents of the frangible disc type, which must be located on the upper head.

(c) Safety valves must be set to open and vents of the frangible disc type must function at a pressure of not exceeding 375 pounds per square inch. Vents of the fusible plug type must function at a temperature of not exceeding 175 degrees Fahrenheit. (For tolerance see § 78.293–14.)

§ 78.293–12 *Fixtures.* (a) Siphon pipes and their couplings on the inside of the tank head and lugs on the outside of the tank head for attaching the valve protection housing may be fusion-welded in place, provided they are properly heat-treated at the time the entire tank is heat-treated. All other fixtures and appurtenances, except as provided for in §§ 78.293–7, 78.293–8, 78.293–9, 78.293–10 and 78.293–11 are prohibited.

§ 78.293–13 *Tests of tanks.* (a) After heat-treatment each tank must be tested, before being put into service, by completely filling the tank with water or other liquid of a similar viscosity of a temperature which must not exceed 100 degrees Fahrenheit during the test and applying a pressure of 500 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress.

(b) Calking of welded joints to stop leaks developed during tests is prohibited. Repairs in welded joints must be made as prescribed in § 78.293–5.

§ 78.293–14 *Tests of safety valves and vents.* (a) Each valve must be tested by air or gas before being put into service and also at intervals as prescribed by retest table No. 2 of § 73.31 of this chap-

ter. The valve must open at a pressure not exceeding 375 pounds per square inch and be vapor tight at 300 pounds per square inch, which limiting pressures must not be affected by any auxiliary closure or other combination.

(b) For safety vents of the frangible disc type, a sample of the disc used must burst at a pressure of not exceeding 375 pounds per square inch and be vapor tight at 300 pounds per square inch.

(c) For safety vents of the fusible plug type, a sample of the fusible plugs used must function at a temperature of not exceeding 175 degrees Fahrenheit and be vapor tight at a temperature of 130 degrees Fahrenheit.

§ 78.293–15 *Alterations and maintenance of tanks.* (a) All prescribed markings on tanks must be kept legible. Copy of the said markings, in letters and figures of the prescribed size stamped on a brass plate secured to the tank, is authorized. Markings must not be changed except as follows:

(1) By application of additional marks not affecting the test pressure or water capacity; these must not obliterate previously applied marks.

(2) By application of test pressure marks, or alteration of such marks, to indicate a reduced test pressure; authorized only for tanks that have not failed in the 5-year test.

(3) By change of serial numbers or ownership marks, or both; report in sufficient detail so that previous serial number and ownership mark can be determined for each tank, arranged by lot numbers or by consecutive serial numbers, must be filed with the Bureau of Explosives.

§ 78.293–16 *Marking.* (a) Each tank must be plainly and permanently marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be stamped into the metal of one head or flange ring, in letters and figures at least ⅜ inch high, as follows:

(1) ICC–110A500–W.

(2) Serial number (immediately below the stamped mark specified in subparagraph (1) of this paragraph).

(3) Inspector's official mark (immediately below the stamped mark specified in subparagraph (2) of this paragraph).

(4) Name, mark (other than trademark) or initials of company or person for whose use the tanks are being made, which must be recorded with the Bureau of Explosives.

(5) Date of tank test (month and year), such as 1–54 for January 1954, so placed that dates of subsequent tests may easily be added thereto.

(6) Water capacity—0000 pounds.

(7) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only" or such other wording which may be required to indicate the usage of the tank, must be stenciled on head of the tank containing operating fittings, in letters at least 1 inch high.

(8) Tanks made of clad plates must be stenciled on the tank (naming material) _____ clad tank.

§ 78.293–17 *Inspection and reports.* (a) Purchaser of tank must provide for inspection by competent inspector as follows:

(1) The inspector must carefully inspect all plates from which tanks are to be made and records pertaining thereto, and plates which do not comply with the requirements of this specification must be rejected.

(2) The inspector must secure complete certified records, including chemical analyses and physical tests on samples taken from each heat of steel used in the manufacture of the plate.

(3) The inspector must report capacity in pounds of water and tare weight of each tank, and the minimum thickness of tank wall noted.

(4) The inspector must make such inspection as may be necessary to see that all the requirements of this specification are fully complied with, must see that the finished tanks are properly heat treated, and must witness all air and hydrostatic tests.

(5) The inspector must stamp his official mark on each accepted tank immediately below the serial number and make certified report (paragraph (b) of this section) to the builder, to the company or person for whose use the tanks are being made, to the builder of the car structure on which the tanks are to be mounted, if any, to the Bureau of Explosives, and to the Secretary, Mechanical Division, Association of American Railroads.

(b) Inspector's report required in this section must be in the following form:

(Place) _____
(Date) _____

STEEL TANKS

It is hereby certified that drawings were submitted for these tanks under A. A. R. Application for Approval No. _____ and approved by the A. A. R. Committee on Tank Cars under date of _____
Built for _____ Company
Location at _____
Built by _____ Company
Location at _____
Consigned to _____ Company
Location at _____
Quantity _____
Size _____ inches outside diameter by _____ inches long

Marks stamped into the head or chime of the tank are:

Specification ICC _____
Serial numbers _____ to _____ inclusive
Inspector's mark _____
Test date _____
Water capacity (See Record of Hydrostatic Tests).
Tare Weights (Yes or No). (See Record of Hydrostatic Tests.)
These tanks were made by process of _____

The steel used was identified as indicated by the attached list showing the serial number of each tank, followed by the heat number of the plate, head, and bottom used in the tank.

The steel used was verified as to chemical analysis and record thereof is attached hereto. The heat numbers were stamped into the metal.

All material, such as plates, billets, and seamless tubing, was inspected and each tank was inspected both before and after closing in the ends; all that was accepted was found free from seams, cracks, laminations, and other defects which might prove injurious to the strength of the tank. The processes of manufacture and heat treatment of tanks were supervised and found to be efficient and satisfactory.

The tank walls were measured and the minimum thickness noted was ____ inch. The outside diameter was determined by a close approximation to be ____ inches. The wall stress was calculated to be ____ pounds per square inch under an internal pressure of ____ pounds per square inch.

Hydrostatic tests, bend and tensile tests of material, and other tests as prescribed in this specification were made in the presence of the inspector and all material and tanks accepted were found to be in compliance with the requirements of this specification. Records thereof are attached hereto.

I hereby certify that all of these tanks proved satisfactory in every way and comply with the requirements of Interstate Commerce Commission Specification No. ____.

(Signed) _____
(Inspector)

(Place) _____
(Date) _____

RECORD OF CHEMICAL ANALYSIS OF STEEL FOR TANKS

Numbered _____ to _____ inclusive
Size _____ inches outside diameter by _____ inches long
Made by _____ Company
For _____ Company

Heat No.	Chemical analysis							
	C	P	S	Si	Mn	Ni	Cr	

The analyses were made by:

(Signed) _____

(Place) _____
(Date) _____

RECORD OF TENSILE TESTS OF MATERIAL IN TANKS

Numbered _____ to _____ inclusive
Size _____ inches outside diameter by _____ inches long
Made by _____ Company
For _____ Company

Heat No.	Yield point (pounds per square inch)	Tensile strength (pounds per square inch)	Elongation (percent in 8 inches)	Reduction of area (percent)	Bend test

(Signed) _____

RECORD OF HYDROSTATIC TESTS ON TANKS

Numbered _____ to _____ inclusive
Size _____ inches outside diameter by _____ inches long
Made by _____ Company
For _____ Company

Serial Nos. of tanks tested	Actual test pressure (pounds per square inch)	Total expansion (cc.)[1]	Permanent expansion (cc.)[1]	Percent ratio of permanent expansion to total expansion	Tare weight pounds[2]	Capacity in pounds of water at 60° F.

[1] If the tests are made by a method involving the measurement of the amount of liquid forced into the tank by the test pressure then the basic data, on which the calculations are made, such as the pump factors, temperature of liquid coefficient of compressibility of liquid, etc., must also be given.

[2] Do not include protective housing and cover but state whether with or without valves.

(Signed) _____

(Place) _____

(Date) _____

(c) Before a tank built under this specification is placed in service, the builder must furnish the owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in proper form certifying that the tank and its appurtenances comply with all the requirements of this specification, including information as to the serial numbers, date of test, and ownership marks on the tanks. In the event the owner of the tank instead of the builder elects to furnish appurtenances such as valve protection caps, loading and unloading valves or vents of the frangible disc or fusible plug type, the owner must furnish to the Bureau of Explosives and the Secretary, Mechanical Division, Association of American Railroads, a report in proper form certifying that these appurtenances comply with all the requirements of this specification.

(d) In case of alterations of or additions to tank or equipment from original design and construction or of repairs, there must be furnished to the owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in detail of the repairs, alterations or additions made to each tank covered by a particular application, showing the serial number of each tank involved and stating that heat-treatment called for by the particular type of repair authorized has been performed and, that after repairs, alterations, or additions, the tests prescribed in § 78.293–13 were made, results of hydrostatic tests reported, and tank marked as prescribed by retest Table No. 2 of § 73.31 of this chapter.

38. Amend entire § 78.294 (18 F. R. 3145, June 2, 1953) (17 F. R. 9842, Nov. 1, 1952) (17 F. R. 7287, Aug. 9, 1952 (49 CFR 1950 Rev., 1954 Supp., 78.294) to read as follows:

§ 78.294 *Specification ICC–105A100–AL–W; lagged fusion-welded aluminum tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.294–1 *Type.* (a) Tanks built under this specification must be cylindrical, with heads designed convex outward. The tank must be provided with a manway nozzle and cover on top of the tank of sufficient diameter to permit access to the interior of the tank and to provide for the proper mounting of venting, loading, unloading, sampling and safety valves, gauging device, thermometer well and a protective housing on the cover. Other openings in the tank are prohibited.

§ 78.294–2 *Lagging.* (a) The tank shell and manway nozzle must be lagged with an approved insulation material of a thickness so the thermal conductance is not more than 0.075 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to the exterior of the tank, the lagging over each heater element may be reduced in thickness equivalent to ½ that required for the shell.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.294–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint, must be at least 495 pounds per square inch.

§ 78.294–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula:

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch as follows:

ASTM B–178 Alloy 996A = 9,500 p. s. i.
ASTM B–178 Alloy 990A = 11,000 p. s. i.
ASTM B–178 Alloy M1A = 14,000 p. s. i.
ASTM B–178 Alloy GR20A = 25,000 p. s. i.
ASTM B–178 Alloy GS11A = 24,000 p. s. i.
ASTM B–178 Alloy GR40A = 30,000 p. s. i.

E = efficiency of longitudinal welded joint = 90 percent.

(b) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal welded joint, including welds, above the cradle.

(c) The thickness of an ellipsoidal head shall be determined by the following formula:

$$t=\frac{Pd}{2SE}$$

where

t = thickness of plate in inches;
P = calculated bursting pressure, pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch (see paragraph (a) of this section);
E = efficiency of welded joint to shell = 100 percent.

§ 78.294–5 *Manway nozzle opening.* (a) Opening in tank for manway nozzle must be reinforced in an approved manner.

§ 78.294–6 *Material.* (a) All plates for tank and manway nozzle must be made of an aluminum alloy to an approved specification and be suitable for fusion welding and not subject to rapid deterioration by the lading.

(b) Aluminum alloy castings used for fittings or attachment to tank must be made of material to an approved specification.

(c) All external projections which may be in contact with the lading must be made of material specified herein.

§ 78.294–7 *Tank heads.* (a) Tank heads must be of approved contour and must be ellipsoidal for pressure on the concave side.

(b) Ellipsoidal tank head shall be an ellipsoid of revolution in which the major axis shall equal the diameter of the shell and the minor axis shall be ½ of the major axis.

§ 78.294–8 *Welding.* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with the requirements of A. A. R. Welding Code Appendix W.

§ 78.294–9 *Stress relieving.* (a) Not a specification requirement.

§ 78.294–10 *Tank mounting.* (a) The manner in which tank is supported on and securely attached to the car structure must be approved.

(b) The use of rivets as a means of securing anchor to the tank is prohibited.

§ 78.294–11 *Manway nozzle, cover and protective housing.* (a) Manway nozzle must be of cast, forged, or fabricated aluminum alloy at least 18 inches inside diameter. Manway nozzle must be of approved design and attached to tank by fusion welding. Fusion welding for securing this attachment in place must be of the double-welded butt joint type or double full fillet lap joint type.

(b) Manway cover must be of forged or rolled aluminum alloy at least 2½ inches thick, or other approved material at least 2¼ inches thick, machined to approved dimensions. Manway cover must be attached to nozzle by through bolts not entering tank.

(c) The shearing value of the bolts attaching protective housing to manway cover must not exceed 70 percent of shearing value of bolts attaching manway cover to manway nozzle.

(d) All joints between manway cover and manway nozzle, and between manway cover and valves or other appurte-

nances mounted thereon, must be made tight against vapor pressure.

(e) Protective housing of cast or fabricated steel, or other approved materials must be bolted to manway cover. Housing must be equipped with a suitable metal cover that can be securely closed. Housing cover on tanks used for the transportation of liquefied flammable gases must be provided with an opening equipped with an approved weatherproof covering and having an area at least equal to the total safety valve discharge area. Housing cover must have suitable stop to prevent cover striking loading or unloading connections and be hinged on one side only with approved riveted pin or rod with nuts and cotters. Openings in wall of housing must be equipped with screw plugs or other closures.

§ 78.294–12 *Venting, loading and unloading, gauging and sampling devices.* (a) Venting, loading and unloading valves must be of approved type, made of metal not subject to rapid deterioration by the lading, and must withstand a pressure of 100 pounds per square inch without leakage. The valves must be directly bolted to seatings on manway cover. Pipe connections of valves must be closed with approved screw plugs chained or otherwise fastened to prevent misplacement.

(b) Interior pipes of the loading and unloading valves, except as prescribed in paragraph (d) of this section may be equipped with excess flow valves of approved design, and must be securely anchored.

(c) Gauging device, sampling valve and thermometer well are not specification requirements. When used, they must be of approved design, made of metal not subject to rapid deterioration by the lading, and must withstand a pressure of 100 pounds per square inch without leakage. Interior pipes of the gauging device and sampling valve, except as prescribed in paragraph (d) of this section, may be equipped with check valves of an approved design. Interior pipe of thermometer well must be anchored in an approved manner to prevent breakage due to vibration. The thermometer well must be closed by an approved valve attached close to the manway cover and closed by a screw plug. Other approved arrangements that permit testing thermometer well for leaks without complete removal of the closure may be used.

(d) Tanks for use in the transportation of liquefied flammable gases must have the interior pipes of the loading and unloading valves, gauging device and sampling valve equipped with check valves of an approved design.

§ 78.294–13 *Safety valves.* (a) The tank must be equipped with one or more safety valves of approved design, made of metal not subject to rapid deterioration by lading and mounted on manway cover. The total valve discharge capacity must be sufficient to prevent building up of pressure in tank in excess of 75 pounds per square inch.

(b) The safety valves must be set to open at a pressure not exceeding 75 pounds per square inch. (For tolerance see § 78.294–17 (a).)

§ 78.294–14 *Fixtures, reinforcements, and attachments, not otherwise specified.* (a) Attachments, other than the anchorage, interior pipe bracing, and those mounted on manway cover, are prohibited. Heater systems may be applied to exterior of tank by tank bands or other approved method.

§ 78.294–15 *Closures for openings.* (a) Plugs must be of approved type, with standard pipe thread, and of metal not subject to rapid deterioration by the lading.

§ 78.294–16 *Tests of tanks.* (a) Each tank must be tested, after anchorage is applied and before the tank lagging is applied, by completely filling tank and manway nozzle with water or other liquid of similar viscosity, having a temperature which must not exceed 100 degrees Fahrenheit during test, and applying a pressure of 100 pounds per square inch. The tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress.

(b) Calking of welded joints to stop leaks developed during the foregoing tests is prohibited. Repairs in welded joints must be made as prescribed in § 78.294–8 (a).

(c) Tests of exterior heater systems are not a specification requirement.

§ 78.294–17 *Tests of safety valves.* (a) Each valve must be tested by air or gas before being put into service. The valve must open at a pressure not exceeding 75 pounds per square inch and be vapor tight at 60 pounds per square inch which limiting pressures must not be affected by any auxiliary closure or other combination.

§ 78.294–18 *Markings.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–105A100AL–W and specification number of material used in tank shell and manway nozzle in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. ICC–105A100AL–W must also be stenciled on the jacket in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph by the party assembling the completed car. These marks must also be stenciled on the jacket in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(6) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the jacket in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

(7) Water capacity of the tank in pounds stamped plainly and permanently in letters and figures at least ⅜ inch high into the metal of the tank immediately below the mark specified in subparagraphs (2) and (3) of this paragraph. This mark must also be stenciled on the jacket immediately below the dome platform and either behind or within 3 feet of the right or left side of ladder, or ladders, if there is a ladder on each side of the tank, in letters and figures at least 2 inches high as follows:

WATER CAPACITY
000000 POUNDS

§ 78.294–19 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Reports of retest must be rendered to the Bureau of Explosives and car owner.

39. Amend entire § 78.295 (17 F. R. 9842, Nov. 1, 1952) (49 CFR 1950 Rev., 1954 Supp., 78.295) to read as follows:

§ 78.295 *Specification ICC–106A800–NCI; fusion-welded nickel-chromium-iron alloy tanks with fusion-welded longitudinal barrel sections, to be mounted on a car.* (a) Wherever the word "approved" is used in this specification, it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c), and (d).

§ 78.295–1 *Type and general requirements.* (a) Tanks built under this specification must be cylindrical with heads designed convex inward. The end of the shell shall be flanged-in in such a manner that the heads are locked in independent of the strength of the fillet welds, as well as providing a chime to

which handling hooks can be attached. The thickness of the cylindrical portion into which the head is driven and the thickness of the flat flanged-in ends shall be at least equal to the head thickness, whereas the cylindrical portion next to the circumferential welds joining the heads to the shell shall be thinned down to the shell plate thickness. All openings must be located in the heads. Tanks must be securely attached to the car structure in such a manner that they may be removed for filling by the consignor and emptying by the consignee. Each tank must have a capacity of at least 1,600 pounds and not more than 2,500 pounds of water.

(b) The tanks must be fabricated by approved methods.

(c) For tanks made in foreign countries, a chemical analysis of material and all tests as specified must be carried out within the limits of the United States under the supervision of a competent and disinterested inspector.

§ 78.295–2 *Thickness of plates.* (a) The wall thickness of tanks must be at least 13/32 inch and must be such that at the test pressure the calculated fiber stress in the wall of tank or in the longitudinal weld seam will not be in excess of 25,000 pounds per square inch, as calculated by the following formula:

$$S=\frac{P(1.3D^2-0.4d^2)}{D^2-d^2}$$

where

P=interior test pressure in pounds per square inch;
D=outside diameter in inches;
d=inside diameter in inches;
S=wall stress in pounds per square inch.

(b) Tank head shall have a thickness equal to at least twice the shell thickness and must also be of sufficient thickness to provide for the threading of openings therein as prescribed in § 78.295–4 (b).

§ 78.295–3 *Material.* (a) All plates and forgings for tank and heads shall be annealed uniform nickel-chromium-iron alloy of good welding quality, free from cracks, laminations, or other defects injurious to the finished tank, and shall have the following chemical composition and tensile properties:

Nickel (plus cobalt)	75.00 percent minimum.
Chromium	12.00 to 15.00 percent.
Iron	9.00 percent maximum.
Copper	0.50 percent maximum.
Manganese	1.00 percent maximum.
Carbon	0.15 percent maximum.
Silicon	0.50 percent maximum.
Sulfur	0.02 percent maximum.

(1) Tensile strength 80,000 to 110,000 pounds per square inch. Yield point (0.2 percent offset) 30,000 to 60,000 pounds per square inch. Elongation in 2 inches 35 percent minimum.

(2) A test specimen must be capable of being bent cold through 180 degrees flat on itself without cracking on the outside of the bent portion. The tensile and bend specimens must be taken from the finished rolled or forged material after annealing, and there must be at least one tensile and one bend test on specimen from each heat.

(b) All plates and forgings must have their heat number and name or brand of manufacturer legibly stamped on them at the mill.

§ 78.295–4 *Tank heads.* (a) The tank heads must be hot pressed, flanging and dishing being done in one heat, so as to make a flange at least 3 inches deep, a mean crown radius not greater than the inside diameter of the head and a mean knuckle radius equal to 3½ times the head thickness. They must be inserted into the tank shell and forgings with flange extending outward and have a snug driving fit into the shell.

(b) Threads for openings in tank heads for valves and vents must be American Standard taper, tapped to gauge, clean cut, even and without checks to insure tight joints.

§ 78.295–5 *Welding.* (a) All joints and seams shall be welded by qualified welders using approved methods of welding and approved filler rod having the same composition as the tank plate. Deposited metal must be fused smoothly and uniformly into plate surface at the top of the joint. All welds shall be free from voids or slag inclusions. Main longitudinal joint shall be double-welded butt joint made with a procedure insuring proper fusion and penetration. Heads shall be fillet welded to the end forgings with welds having a throat at least 25 percent greater than the head thickness. The circumferential welds joining the end forgings and shell shall be of the butt type with nickel-chromium-iron alloy backing strips to insure complete fusion. Welded joint shall be tested by specimens and radiographs.

(b) Alternate welding procedure: Longitudinal seams may be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints fabricated by means of fusion-welding must be in accordance with the requirements of AAR Welding Code, Appendix W.

§ 78.295–6 *Heat treatment.* (a) Each finished tank, before being subjected to the hydrostatic test, must be uniformly and properly heat-treated by heating to a temperature of 1,400 degrees Fahrenheit for 1½ hours in a nonoxidizing furnace atmosphere so as to remove any undue strains due to processes of manufacture.

§ 78.295–7 *Tank mounting.* (a) The manner in which tanks are mounted on and securely attached to the car structure must be approved.

§ 78.295–8 *Protective housing and cover.* (a) Valves and other closures of openings in tank heads, except fusible plug vents, must be protected against accidental injury by a detachable cast or pressed steel housing at least 3/16 inch thick, which must not project beyond the flanged ends of the tank and must be securely fastened to tank head. Housing must be provided with an opening having an area equal to the total safety valve or vent discharge area.

(b) The upper head of tanks mounted vertically on the car structure must be completely covered by a light metal cover designed to exclude moisture, cinders, and other foreign matter, and to be displaced by pressure of gas discharged through safety valves or vents.

§ 78.295–9 *Venting, loading and unloading valves.* (a) These valves must be of approved type, made of metal not subject to rapid deterioration by lading, and must withstand a pressure of 800 pounds per square inch without leakage. The valves must be screwed directly into tank heads or attached to tank heads by other approved methods. Provision must be made for closing the pipe connections of the valves.

§ 78.295–10 *Safety valves or vents.* (a) Unless prohibited for type of service in which tank is used, the tank must be equipped with one or more safety valves or vents of approved type, made of metal not subject to rapid deterioration by the lading and screwed directly into tank heads or attached to heads by other approved methods. The total valve or vent discharge capacity must be sufficient to prevent building up of pressure in tank in excess of ¾ of the test pressure; when safety vents of the fusible plug type are used, the required discharge capacity must be available in each head.

(b) Tanks mounted vertically on the car structure must have safety valves, or vents of the frangible disc type, which must be located on the upper head.

(c) Safety valves must be set to open and vents of the frangible disc type must function at a pressure of not exceeding 600 pounds per square inch. Vents of the fusible plug type must function at a temperature of not exceeding 175 degrees Fahrenheit. (For tolerance see § 78.295–13 (a), (b) and (c).)

§ 78.295–11 *Fixtures.* (a) Siphon pipes and their couplings on the inside of the tank head and lugs on the outside of the tank head for attaching the valve protective housing may be fusion-welded in place in accordance with A. A. R. Welding Code Appendix W, provided they are properly heat-treated in accordance with § 78.295–6 (a) at the time the entire tank is heat-treated. All other fixtures and appurtenances, except as provided in §§ 78.295–7, 78.295–8, 78.295–9 and 78.295–10, are prohibited.

§ 78.295–12 *Tests of tank.* (a) After heat-treatment tanks must be subjected to hydrostatic test in a water jacket, or other accurate method, operated so as to obtain reliable data. No tank shall have been subjected previously to internal pressure within 100 pounds of the test pressure. Each tank must be tested to 800 pounds per square inch. Pressure must be maintained for 30 seconds and sufficiently longer to insure complete expansion of tank. Pressure gauge must permit reading to accuracy of 1 percent. Expansion gauge must permit reading of total expansion to accuracy of 1 percent. Expansion must be recorded in cubic centimeters.

(b) Permanent volumetric expansion must not exceed 10 percent of total volumetric expansion at test pressure.

(c) Each finished tank must be subjected to interior air pressure test of at least 100 pounds per square inch under conditions favorable to detection of any leakage. No leaks shall appear.

(d) Repairs of leaks detected in manufacture or test must be made by the same process as employed in manufacture of tank. Calking, soldering, or similar repairing is prohibited.

§ 78.295–13 *Tests of safety valves and vents.* (a) Each valve must be tested by air or gas before being put into service. The valve must open at a pressure of not exceeding 600 pounds per square inch and be vapor tight at 480 pounds per square inch which limiting pressures must not be affected by any auxiliary closure of other combination.

(b) For safety vents of the frangible disc type. A sample of the discs used must burst at a pressure of not exceeding 600 pounds per square inch and be vapor-tight at 480 pounds per square inch.

(c) For safety vents of the fusible plug type. A sample of the fusible plugs used must function at a temperature of not exceeding 175 degrees Fahrenheit, and be vapor-tight at a temperature of 130 degrees Fahrenheit.

§ 78.295–14 *Alterations and maintenance of tanks.* (a) All prescribed markings on tanks must be kept legible. Copy of the said markings, in letters and figures of the prescribed size stamped on a brass plate secured to the tank, is authorized. Markings must not be changed except as follows:

(1) By application of additional marks not affecting the test pressure or water capacity; these must not obliterate previously applied marks.

(2) By application of test pressure marks, or alteration of such marks, to indicate a reduced test pressure; authorized only for tanks that have not failed in the 5-year test.

(3) By change of serial numbers or ownership marks, or both. A report must be filed with the Bureau of Explosives in sufficient detail so that previous serial number and ownership mark can be determined for each tank, arranged by lot numbers or by consecutive serial numbers.

§ 78.295–15 *Marking.* (a) Each tank must be plainly and permanently marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be stamped into the metal of one head or chime, in letters and figures at least ⅜ inch high, as follows:

(1) ICC–106A800NCI.

(2) Serial number immediately below the stamped mark specified in subparagraph (1) of this paragraph.

(3) Inspector's official mark immediately below the stamped mark specified in subparagraph (2) of this paragraph.

(4) Name, mark (other than trademark), or initials of company or person for whose use the tanks are being made, which must be recorded with the Bureau of Explosives.

(5) Date of tank test (month and year), such as 1–54 for January 1954, so placed that date of subsequent tests may easily be added thereto.

(6) Water capacity—0000 pounds.

§ 78.295–16 *Inspection and reports.* (a) Purchaser of tanks must provide for inspection by a competent inspector as follows:

(1) The inspector must carefully inspect all plates from which tanks are to be made, and records pertaining thereto, and plates which do not comply with the requirements of this specification must be rejected.

(2) The inspector must secure complete certified records, including chemical analyses and physical tests on samples taken from each heat of steel used in the manufacture of the plate.

(3) The inspector must report capacity in pounds of water and tare weight of each tank and the minimum thickness of tank wall noted.

(4) The inspector must make such inspection as may be necessary to see that all the requirements of this specification are fully complied with, must see that the finished tanks are properly heat-treated, and must witness all air and hydrostatic tests.

(5) The inspector must stamp his official mark on each accepted tank immediately below the serial number, and make certified report (see paragraph (b) of this section) to the builder, to the company or person for whose use the tanks are being made, to the builder of the car structure on which the tanks are to be mounted, if any, to the Bureau of Explosives, and to the Secretary, Mechanical Division, Association of American Railroads.

(b) Inspector's report required herein must be in the following form:

(Place) _____
(Date) _____

STEEL TANKS

It is hereby certified that drawings were submitted for these tanks under A. A. R. Application for Approval No. _____ and approved by the A. A. R. Committee on Tank Cars under date of _____
Built for _____ Company
Location at _____
Built by _____ Company
Location at _____
Consigned to _____ Company
Location at _____
Quantity _____
Size _____ inches outside diameter by _____ inches long

Marks stamped into the head or chime of the tank are:

Specification ICC _____
Serial numbers _____ to _____ inclusive
Inspector's mark _____
Owner's mark _____
Test date _____
Watercapacity (See Record of Hydrostatic Tests)
Tare weights (Yes or No.) (See Record of Hydrostatic Tests.)

These tanks were made by process of _____.

The steel used was identified as indicated by the attached list showing the serial number of each tank, followed by the heat number of the plate, head, and bottom used in the tank.

The steel used was verified as to chemical analysis and record thereof is attached hereto. The heat numbers were stamped into the metal.

All material, such as plates, billets, and seamless tubing, was inspected both before and after closing in the ends; all that was accepted was found free from seams, cracks, laminations, and other defects which might prove injurious to the strength of the tank. The processes of manufacture and heat treatment of tanks were supervised and found to be efficient and satisfactory.

The tank walls were measured and the minimum thickness noted was _____ inch. The outside diameter was determined by a close approximation to be _____ inches. The wall stress was calculated to be _____ pounds per square inch under an internal pressure of _____ pounds per square inch.

Hydrostatic tests, bend and tensile tests of material, and other tests, as prescribed in this specification were made in the presence of the inspector and all material and tanks accepted were found to be in compliance with the requirements of this specification. Records thereof are attached hereto.

I hereby certify that all of these tanks proved satisfactory in every way and comply with the requirements of Interstate Commerce Commission Specification No. _____.

(Signed) _____
(Inspector)

(Place) _____
(Date) _____

RECORD OF CHEMICAL ANALYSIS OF STEEL FOR TANKS

Numbered _____ to _____ inclusive
Size _____ inches outside diameter by _____ inches long
Made by _____ Company
For _____ Company

Heat No.	Chemical analysis						
	C	P	S	Si	Mn	Ni	Cr

The analyses were made by:

(Signed) _____

(Place) _____
(Date) _____

RECORD OF HYDROSTATIC TESTS ON TANKS

Numbered _____ to _____ inclusive
Size _____ inches outside diameter by _____ inches long
Made by _____ Company
For _____ Company

Serial Nos. of tanks	Actual test pressure (pounds per square inch)	Total expansion (cc.)[1]	Permanent expansion (cc.)[1]	Percent ratio of permanent expansion to total expansion	Tare weight (pounds)[2]	Capacity in pounds of water at 60° F.

[1] If the tests are made by a method involving the measurement of the amount of liquid forced into the tank by the test pressure then the basic data, on which the calculations are made, such as the pump factors, temperature of liquid, coefficient of compressibility of liquid, etc., must also be given.

[2] Do not include protective housing and cover but state whether with or without valves.

(Signed) _____

(c) Before a tank built under this specification is placed in service, the builder must furnish to the owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of

American Railroads, a report in proper form certifying that the tank and its equipment comply with all the requirements of this specification including information as to the serial numbers, dates of test, and ownership marks on the tanks.

(d) In the event the owner of the tank instead of the builder elects to furnish the appurtenances such as valve protection caps, loading and unloading valves, and safety valves or vents of the frangible disc or fusible plug type, the owner must furnish to the Bureau of Explosives, and to the Secretary, Mechanical Division, Association of American Railroads, a report in proper form certifying that these appurtenances comply with all the requirements of this specification.

(e) In case of alterations of or additions to tanks or equipment from original design and construction or of repairs, there must be furnished to the owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in detail of the repairs, alterations, or additions made to each tank covered by a particular application showing the serial number of each tank involved and stating that heat-treatment called for by the particular type of repair authorized has been performed and that after repairs, alterations, or additions the tests prescribed in § 78.295–12, were made, results of hydrostatic tests reported, and tanks marked as prescribed by retest table No. 2 of § 73.31 of this chapter.

40. Amend entire § 78.296 (17 F. R. 9842 to 9844, Nov. 1, 1952) (49 CFR 1950 Rev., 1954 Supp., 78.296) to read as follows:

§ 78.296 *Specification ICC–103B100–W; rubber lined fusion-welded steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.296–1 *Type.* (a) Tanks built under this specification must be cylindrical with heads designed convex outward, and must have at least 1 expansion dome with manway, and such other external projections as are prescribed herein.

§ 78.296–2 *Lagging.* (a) Not a specification requirement. If applied, the tank shell and expansion dome must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to the exterior of tank, the lagging over each heater element may be reduced in thickness.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.296–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint, must be at least 495 pounds per square inch.

§ 78.296–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal welded joint = 90 percent.

(b) The minimum thickness of plates must be as follows:

Inside diameter of tanks	Bottom sheet	Shell sheet	Tank head	Dome shell	Dome head
	Inch	*Inch*	*Inch*	*Inch*	*Inch*
87 inches or under	½	½	½	3/8	3/8
Over 87 to 96 inches	9/16	9/16	9/16	3/8	3/8

(c) Tank must be lined with rubber at least 5/32 inch thick except over all rivets and seams formed by attachments where the lining must be double thickness. The lining must overlap at least 1½ inches at all edges, which must be straight and be beveled to an angle of approximately 45 degrees. A rubber reinforcement pad at least 4½ feet square and at least ½ inch thick must be applied by vulcanizing to the lining on bottom of tank directly under the dome. Edges of pad must be beveled to an angle of approximately 45 degress. An opening in this pad for sump is permitted. No rubber shall be under tension when applied except that due to conformation over rivet heads. Interior of tank must be free from scale, oxidation, moisture, and all foreign matter during the lining operation.

(d) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal welded joint, including welds, above the cradle.

§ 78.296–5 *Material.* (a) All plates for tank and expansion dome must be made of open-hearth boiler-plate flange quality steel to an approved specification, the carbon content of which shall not exceed 0.31 percent.

(b) All castings used for fittings or attachments to tank must be of material to an approved specification. The use of cast iron prohibited.

(c) Rivets, if used, must be of the same quality as used for steam boilers and other pressure vessels and be made of steel to an approved specification.

(d) Each tank must be lined with acid-resisting rubber, vulcanized or bond directly or otherwise attached to the metal tank, to provide a non-porous laminated lining.

(e) All external projections must be made of materials specified herein.

§ 78.296–6 *Tank heads.* (a) The tank head shape shall be an ellipsoid of revolution in which the major axis shall equal the diameter of the shell and the minor axis shall be ½ of the major axis.

§ 78.296–7 *Welding.* (a) All joints must be fusion welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by the Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with the requirements of A. A. R. Welding Code, Appendix W.

§ 78.296–8 *Manway ring, safety valve flange, sump flange or other attachments.* (a) These attachments must be secured to tank by fusion-welding. Fusion welding for securing attachments in place must be of the double-welded butt joint type or double full-fillet lap joint type. All projection edges of plates and castings on inside of tank must be rounded and free from fins or other irregular projections. Castings must be free from porosity.

§ 78.296–9 *Stress relieving.* (a) All welding of the tank shell and of attachments welded directly thereto must be stress-relieved as a unit.

§ 78.296–10 *Tank mounting.* (a) The manner in which tank is supported on and securely attached to the car structure must be approved.

§ 78.296–11 *Expansion dome.* (a) The expansion dome must have a capacity, measured from the inside top of shell of tank to bottom of manway cover of at least 1 percent of the capacity of tank and dome combined.

(b) The opening for manway, before lining, must be at least 18 inches in diameter, the opening in the tank shell at the dome shall be fully cut out or flued to the inside diameter of the dome, which shall not exceed 42 inches. Tank shell at dome must be reinforced in an approved manner.

(c) Dome head must be made of steel and to an approved contour. If dished, the knuckle radius shall be at least 6 percent of the spherical dish radius, and the thickness shall not be less than that specified in § 78.296–4 (b). The inside spherical radius shall not be in excess of the diameter of the dome. Dome head may be flued for attachment of a manway flange having a minimum inside diameter of 18 inches.

§ 78.296–12 *Closures for manway.* (a) The manway cover must be of approved type and designed to provide a secure closure of the manway.

(b) Manway cover must be made of a suitable metal of approved thickness, and must be attached to manway flange by through bolts not entering the tank. The top, bottom where exposed to lading, and edge of manway cover must be rubber covered as prescribed in §§ 78.296–4 (c)

and 78.296–5 (d). Through bolt holes must be lined with rubber at least ⅛ inch in thickness. Cover made of metal not affected by lading need not be rubber covered. All rubber surfaces on outside of tank or fittings must be protected with an age-resisting coating. All attachments must be made of cast, forged or fabricated metal and be of good weldable quality in conjunction with metal of manway cover.

(c) The shearing value of the bolts attaching the protective housing to manway cover must not exceed 70 percent of shearing value of bolts attaching manway cover to manway flange.

(d) All joints between manway cover and manway flange, and between manway cover and valves or any appurtenances mounted thereon, must be made tight against vapor pressure.

§ 78.296–13 *Venting, loading and unloading, gauging, and air inlet devices.* (a) These devices must be of approved design and withstand a pressure of 100 pounds per square inch without leakage. They must be bolted to fittings or seatings on the manway cover. Connections to valves must be closed with blind flanges bolted tightly over valve outlets, chained or otherwise fastened to prevent misplacement. Interior pipes of these devices extending into the tank shell, must be anchored at their lower ends.

(b) Venting, loading and unloading, gauging, and air inlet devices made of material affected by the lading must have all surfaces rubber covered as prescribed in §§ 78.296–4 (c) and 78.296–5 (d).

(c) Protective housing of cast or fabricated steel must be bolted to manway cover. Housing must be equipped with a suitable metal cover that can be securely closed. Housing cover must have a suitable stop to prevent cover striking loading and unloading connections and be hinged on one side only with approved riveted pin or rod with nuts and cotters. Opening in wall of housing must be equipped with screw plugs or other closures.

§ 78.296–14 *Bottom outlet.* (a) Bottom outlet is prohibited. Bottom sump is permissible. If used it must be welded to tank and must be of cast, fabricated or forged metal of good weldable quality in conjunction with metal of tank.

§ 78.296–15 *Safety valves.* (a) The tank must be equipped with one or more safety valves of approved design, made of material not subject to rapid deterioration by lading and mounted on manway cover. The total valve discharge capacity must be sufficient to prevent building up of pressure in tank in excess of 75 pounds per square inch.

(b) The safety valves must be set to open at a pressure not exceeding 75 pounds per square inch. (For tolerance see § 78.296–20 (a).)

§ 78.296–16 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) Attachments, other than the anchorage, sump, and those mounted on manway cover, are prohibited. Interior heater systems, when installed, must be made of material not affected by the lading. They must be constructed so that the breaking off of their external connections will not cause leakage of contents of tank.

§ 78.296–17 *Interior heater systems.* (a) See §§ 78.260 and 78.261, heater systems.

(b) Interior heater system closure flanges welded to tank or dome, must be made of cast, forged or fabricated metal and be of good weldable quality in conjunction with metal of tank or dome.

§ 78.296–18 *Closures for openings.* (a) Closures for all openings must have all surfaces exposed to the lading rubber covered or be made of material not affected by the lading.

§ 78.296–19 *Tests of tanks.* (a) Each tank must be tested, before rubber lining is applied, by completely filling the tank and dome with water, or other liquids having similar viscosity, of a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 100 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All rivets and closures, except safety valves, must be in place while test is made. After tank is rubber lined, no further tests are required.

(b) If tanks are to be lagged the test of tanks must be made before lagging is applied.

(c) Calking of welded joints to stop leaks developed during the foregoing tests prohibited. Repairs in welded joints must be made as prescribed in § 78.296–7 (a).

(d) Test of interior heater system. Before interior heater systems are placed in service they must be tested with hydrostatic pressure and must be tight at 200 pounds per square inch.

§ 78.296–20 *Tests of safety valves.* (a) Each valve must be tested by air or gas before being put into service. The value must open at a pressure not exceeding 75 pounds per square inch and be vapor tight at 65 pounds per square inch, which limiting pressures must not be effected by any auxiliary closure or other combination.

§ 78.296–21 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–103B100–W in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. This mark must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, such as application of riveted anchors, etc., in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph by the party assembling the completed car. These marks must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) "Rubber lined tank—pressure test not required", stenciled on tank, or jacket if lagged, instead of record of test of tank.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom stenciled on the tank, or jacket if lagged.

(6) Date on which interior heater systems were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(7) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the tank, or jacket if lagged, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.296–22 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and the car owner.

41. Add § 78.297 (15 F. R. 8523, Dec. 2, 1950) (49 CFR 78.297, 1950 Rev.) to read as follows:

§ 78.297 *Specification ICC–103D–W; fusion welded alloy steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification, it means approval by the Association of American

Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.297–1 *Type.* (a) Tanks built under this specification must be cylindrical, with heads designed convex outward, and must have at least 1 expansion dome with manway, and such other external projections as are prescribed herein. When the interior of the tank is divided into compartments, each compartment must have 2 heads designed convex outward, 1 expansion dome with manway, and such other external projections as are prescribed herein.

§ 78.297–2 *Lagging.* (a) Not a specification requirement. If applied, the tank shell and expansion dome must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to exterior of tank, the lagging over each heater element may be reduced in thickness.

(b) Before lagging is applied, the inside surface of the metal jacket shall be given a protective coating.

§ 78.297–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint, must be at least 240 pounds per square inch.

§ 78.297–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal welded joint = 90 percent.

(1) The thickness of a dished head must be determined by the following formula, but in no case be less than that specified in paragraph (b) of this section:

$$t=\frac{5PL}{6SE}$$

where

t = thickness of plate in inches;
P = calculated bursting pressure pounds per square inch;
L = main inside radius to which head is dished measured on concave side in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of welded joint.

When head is formed from one piece, the efficiency may be considered as 100 percent.

(b) The minimum thickness of plates must be as follows:

Inside diameter of tanks	Bottom sheets	Shell sheets	Expansion dome sheets	Tank heads	Expansion dome heads	Interior compartment heads
	Inch	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
60 inches or under	7/16	¼	5/16	½	5/16	5/16
Over 60 to 78 inches	7/16	5/16	5/16	½	5/16	5/16
Over 78 to 96 inches	½	3/8	5/16	½	5/16	3/8
Over 96 to 112 inches	½	7/16	5/16	9/16	5/16	7/16
Over 112 to 122 inches	½	½	5/16	5/8	5/16	½

(c) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal welded joint, including welds, above the cradle.

(d) For tanks built on 1 piece cylindrical sections, the thickness specified for bottom sheet must apply to the entire cylindrical shell.

(e) When tank is divided into compartments the interior heads must comply with the requirements for interior compartment heads prescribed herein. When capacity of tank is reduced by moving in the exterior head a new exterior head of approved contour not less than ⅜ inch thickness must be applied. When the capacity is reduced by the insertion of a new interior head this head must comply with the requirements for interior compartment heads and the exterior head reapplied. Voids, created by the addition of heads for division into compartments or reduction in capacity, must be provided with a tapped drain hole at their lowest point, and a tapped hole at top of tank. The top hole must be closed, and the bottom hole may be closed, with not less than ¾ inch nor more than 1½ inch solid pipe plugs having standard pipe threads.

§ 78.297–5 *Material.* (a) All plates for tank and expansion dome, must be to an approved specification and be made of a metal capable of resisting the action of nitric acid as follows: The maximum corrosion rate in inches penetration per month in the standard 65 percent boiling nitric acid test shall be 0.006" for the straight chromium-bearing stainless steel and 0.0015" for any of the chromium nickel alloys and modified chromium nickel type, this figure to be an average of five 48-hour periods.

(b) All alloy castings and forgings used for fittings or attachments to tank must be to an approved specification and not subject to rapid deterioration by the lading.

§ 78.297–6 *Tank heads.* (a) Tank heads must be of approved contour and must be designed for pressure on concave side and to main inside radius not exceeding 10 feet. The inside knuckle radius must not be less than 3¾ inches except for interior heads of compartment tanks the knuckle radius must not be less than 1½ inches.

§ 78.297–7 *Welding.* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with requirements of AAR Welding Code Appendix "W".

§ 78.297–8 *Manway ring, safety valve flange, and sump flange or other attachments.* (a) These attachments must be fusion-welded to tank or dome. Fusion-welding for securing these attachments in place must be of the double-welded butt joint type or double full-fillet lap joint type.

§ 78.297–9 *Heat treatment.* (a) All welding of the tank shell and of attachments welded directly thereto must be heat treated as a unit to remove stresses and at the proper temperature to obtain the corrosion resistance specified in § 78.297–5 (a).

§ 78.297–10 *Tank mounting.* (a) The manner in which the tank is supported on and securely attached to the car structure must be approved.

(b) The use of rivets as a means of securing anchor to the tank is prohibited.

§ 78.297–11 *Expansion dome.* (a) The expansion dome must have a capacity measured from the inside top of shell of tank to the inside top of dome or bottom of any vent pipe projecting inside dome, of at least 2 percent of the total capacity of the tank and dome combined.

(b) The opening for manway must be at least 16 inches in diameter. The opening in the tank shell within the dome must be at least 29 inches in diameter. When the opening in the tank shell exceeds 30 inches in diameter, the opening must be reinforced in an approved manner. When the opening in the tank shell is less than the inside diameter of the dome, dome pocket drain holes must be provided in the tank shell with nipples extending inside the tank at least 1 inch.

(c) The dome head must be of approved contour and must be designed for pressure on concave side.

§ 78.297–12 *Closures for manway.* (a) The manway cover must be of approved type and designed to make it impossible to remove the cover while the interior of the tank is subjected to pressure.

(b) Manway ring and cover must be made of the metal prescribed in § 78.297–5 (a) or (b), whichever applies.

(c) All joints between manway covers and their seats must be made tight against leakage of vapor and liquid by use of gaskets of suitable material.

§ 78.297–13 *Gauging, bottom outlet valve operating rod, venting, loading and unloading, and air inlet devices extending*

through dome of tank. (a) Not specification requirements. When installed, these devices including their valves and fittings must be of approved design, made of materials not subject to rapid deterioration by the lading. These devices including their valves must be provided with a protective housing. Unloading pipe must be securely anchored within the tank. Provision must be made for closing pipe connections of valves.

§ 78.297–14 *Bottom outlets.* (a) The bottom outlet, when installed, must be made of metal not subject to rapid deterioration by the lading, be of approved construction, and be provided with a valve at its upper end and a liquid tight closure at its lower end.

(b) The valve operating mechanism and outlet nozzle construction must be such as to insure against unseating of valve due to stresses or shocks incident to transportation.

(c) Bottom outlet nozzle may be cast, fabricated or forged metal. If outlet nozzle is welded to tank, it must be of cast, forged or fabricated metal and be of good weldable quality in conjunction with metal of tank.

(d) To provide for the attachment of standard unloading connections, the bottom of the main portion of the outlet nozzle or some fixed attachments thereto, must have Unified Form Threads, 4 threads to the inch.

(e) For outlet nozzles that extend 6 inches or more from shell of tank a "V" groove must be cut (not cast) in the upper part of outlet nozzle at a point immediately below lowest part of valve to a depth that will leave thickness of nozzle wall at the root of the "V" not over ⅜ inch. In the case of steam-jacketed outlet nozzles this groove must be below the steam chamber but above the bottom of center sill construction. Where outlet nozzle is not a single piece, arrangement must be made to provide the equivalent of the breakage groove.

(f) The flange on the outlet nozzle must be of a thickness which will prevent distortion of the valve seat or valve by any change in contour of the shell resulting from expansion of lading, or other causes, and which will insure that accidental breakage of the outlet nozzle will occur at or below the "V" groove.

(g) The valve must have no wings or stem projecting below the "V" groove in the outlet nozzle. The valve and seat must be readily accessible or removeable for repairs, including grinding.

(h) The outlet valve operating mechanism must have means for compensating for variation in the vertical diameter of the tank produced by expansion, weight of the liquid contents, or other causes, and should operate from the interior of the tank, but in the event the rod is carried through the dome, leakage must be prevented by packing in stuffing box and cap nut.

(i) In no case must extreme projection of bottom outlet equipment extend to within 12 inches above top of rail. All bottom outlet reducers and closures and their attachments must be sured to the car by at least ⅜ inch chain or its equivalent, except that outlet closure plugs or outlet closure flange and ¾ inch solid screw drain plug may be attached by ¼ inch chain. When the bottom outlet closure is of the combination cap and valve type, the pipe connection to the valve must be closed by a plug or cap.

§ 78.297–15 *Safety valves.* (a) The tank must be equipped with one or more safety valves of approved design at least 2 inches inside diameter mounted on top of expansion dome. Total valve discharge capacity must be sufficient to prevent building up pressure in tank in excess of 45 pounds per square inch.

(b) One or more safety valves must be provided for each tank or compartment thereof.

(c) The safety valve must be set to open at a pressure of 35 pounds per square inch and be vapor tight at 28 pounds per square inch. For tolerance see § 78.297–20 (a).

(d) Tanks used for the transportation of corrosive liquids, flammable solids, oxidizing materials, or poisonous liquids or solids, class B, need not be equipped with safety valves, but if not so equipped must have 1 safety vent at least 1¾ inches inside diameter closed with a frangible disc of lead or other suitable material of a thickness that will rupture at not more than 45 pounds per square inch. Means for holding disc in place must be such as to prevent distortion or damage to disc when applied. Safety vent closure must be chained or otherwise fastened to prevent misplacement. All tanks equipped with vents must be stenciled "Not for Flammable Liquids."

(e) Safety valve or safety vent flanges must be of cast, forged, or fabricated metal not subject to rapid deterioration by the lading, and be of good weldable quality in conjunction with metal of dome.

§ 78.297–16 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) All attachments to tank and dome must be applied by welding. Interior heater systems, when installed, must be so constructed that the breaking off of their external connections will not cause leakage of the contents of the tank.

§ 78.297–17 *Interior heater systems.* (a) See §§ 78.260 and 78.261, heater systems.

(b) Interior heater systems and plug flanges, must be of cast, forged or fabricated material complying with the requirements of § 78.297–5 (a) or (b), whichever applies.

§ 78.297–18 *Closures for openings.* (a) All plugs must be solid, made of materials not subject to rapid deterioration by the lading, with standard pipe thread, and must be of a length which will screw at least 6 threads inside the face of fitting or tank. Plugs, when inserted from the outside of tank heads must have the letter "S" at least ⅜ inch in size stamped with steel stamp or cast on the outside surface to indicate the plug is solid.

§ 78.297–19 *Tests of tanks.* (a) Each tank must be tested, before being put into service, by completely filling the tank and dome with water, or other liquid having similar viscosity, of a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 60 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All closures, except safety valves or vents, must be in place while test is made.

(b) If tanks are to be lagged, the test of tank must be made before lagging is applied.

(c) Calking of welded joints to stop leaks developed during the foregoing tests prohibited. Repairs in welded joints must be made as prescribed in § 78.297–7 (a).

(d) Tests of interior heater systems. Before interior heater systems are placed in service they must be tested with hydrostatic pressure and must be tight at 200 pounds per square inch.

§ 78.297–20 *Tests of safety valves.* (a) Valve must be tested before being put into service, by attaching to an air line and applying pressure. The valve must open at the pressure prescribed in § 78.297–15 (c) with a tolerance of plus or minus 3 pounds.

§ 78.297–21 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–103D–W and specification number of material used in tank shell and expansion dome in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. ICC–103D–W must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph, by the party assembling the completed car. These marks must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(6) Date on which interior heater systems were last tested, pressure to which tested, place where test was made, and

by whom, stenciled on the tank, or jacket if lagged.

(7) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the tank, or jacket if lagged, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.297–22 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish the car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of, or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

42. Add § 78.298 (15 F. R. 8523, Dec. 2, 1950) (49 CFR 78.298, 1950 Rev.) to read as follows:

§ 78.298 *Specification ICC–103E–W; fusion-welded alloy steel tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification, it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.298–1 *Type.* (a) Tanks built under this specification must be cylindrical, with heads designed convex outward, and must have at least 1 expansion dome with manway, and such other external projections as are prescribed herein. When the interior of the tank is divided into compartments, each compartment must have 2 heads designed convex outward, 1 expansion dome with manway, and such other external projections as are prescribed herein.

§ 78.298–2 *Lagging.* (a) Not a specification requirement. If applied, the tank shell and expansion dome must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to exterior of tank, the lagging over each heater element may be reduced in thickness.

(b) Before lagging is applied, the inside surface of the metal jacket shall be given a protective coating.

§ 78.298–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint, must be at least 240 pounds per square inch.

§ 78.298–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal welded joint = 90 percent.

(1) The thickness of a dished head must be determined by the following formula, but in no case be less than that specified in paragraph (b) of this section:

$$t=\frac{5PL}{6SE}$$

where

t = thickness of plate in inches;
P = calculated bursting pressure pounds per square inch;
L = main inside radius to which head is dished measured on concave side in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of welded joint.

When head is formed from one piece, the efficiency may be considered as 100 percent.

(b) The minimum thickness of plates must be as follows:

Inside diameter of tanks	Bottom sheets	Shell sheets	Expansion dome sheets	Tank heads	Expansion dome heads	Interior compartment heads
	Inch	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
60 inches or under	7/16	¼	5/16	½	5/16	5/16
Over 60 to 78 inches	7/16	5/16	5/16	½	5/16	5/16
Over 78 to 96 inches	½	3/8	5/16	½	5/16	3/8
Over 96 to 112 inches	½	7/16	5/16	9/16	5/16	7/16
Over 112 to 122 inches	½	½	5/16	5/8	5/16	½

(c) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal welded joint, including welds, above the cradle.

(d) For tanks built of 1 piece cylindrical sections, the thickness specified for bottom sheet must apply to the entire cylindrical shell.

(e) When tank is divided into compartments the interior heads must comply with the requirements for interior compartment heads prescribed herein. When capacity of tank is reduced by moving in the exterior head a new exterior head of approved contour not less than ⅜ inch thickness must be applied. When the capacity is reduced by the insertion of a new interior head this head must comply with the requirements for interior compartment heads and the exterior head reapplied. Voids, created by the addition of heads for division into compartments or reduction in capacity, must be provided with a tapped drain hole at their lowest point, and a tapped hole at the top of tank. The top hole must be closed, and the bottom hole may be closed, with not less than ¾ inch nor more than 1½ inch solid pipe plugs having standard pipe threads.

§ 78.298–5 *Material.* (a) All plates for tank and expansion dome, must be to an approved specification and be made of metal capable of resisting the action of nitric acid as follows: The maximum corrosion rate in inches penetration per month in the standard 65 percent boiling nitric acid test shall be 0.006" for the straight chromium-bearing stainless steel and 0.0015" for any of the chromium nickel alloys and modified chromium nickel type, this figure to be an average of five 48-hour periods.

(b) All alloy castings and forgings used for fittings or attachments to tank must be to an approved specification and not subject to rapid deterioration by the lading.

§ 78.298–6 *Tank heads.* (a) Tank heads must be of approved contour and must be designed for pressure on concave side and to main inside radius not exceeding 10 feet. The inside knuckle radius must not be less than 3¾ inches except for interior heads of compartment tanks the knuckle radius must not be less than 1½ inches.

§ 78.298–7 *Welding.* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with requirements of AAR Welding Code Appendix "W".

§ 78.298–8 *Manway ring, safety valve flange, and sump flange or other attachments.* (a) These attachments must be fusion-welded to tank or dome. Fusion welding for securing these attachments in place must be of the double-welded butt joint type or double full-fillet lap joint type.

§ 78.298–9 *Heat treatment.* (a) All welding of the tank shell and of attachments welded directly thereto must be heat treated as a unit to remove stresses and at the proper temperature to obtain the corrosion resistance specified in § 78.298–5 (a).

§ 78.298–10 *Tank mounting.* (a) The manner in which the tank is supported on and securely attached to the car structure must be approved.

(b) The use of rivets as a means of securing anchor to the tank is prohibited.

§ 78.298–11 *Expansion dome.* (a) The expansion dome must have a capac-

ity measured from the inside top of shell of tank to the inside top of dome or bottom of any vent pipe projecting inside dome, of at least 2 percent of the total capacity of the tank and dome combined.

(b) The opening for manway must be at least 16 inches in diameter. The opening in the tank shell within the dome must be at least 29 inches in diameter. When the opening in the tank shell exceeds 30 inches in diameter, the opening must be reinforced in an approved manner. When the opening in the tank shell is less than the inside diameter of the dome, dome pocket drain holes must be provided in the tank shell with nipples extending inside the tank at least 1 inch.

(c) The dome head must be of approved contour and must be designed for pressure on concave side.

§ 78.298–12 *Closures for manway.* (a) The manway cover must be of bolted type, bolted and hinged type, or other approved types, and designed to provide a secure closure of the manway.

(b) Manway ring and cover must be made of the metal prescribed in § 78.298–5 (a) or (b), whichever applies.

(c) All joints between manway covers and their seats must be made tight against leakage of vapor and liquid by use of gaskets of suitable material.

§ 78.298–13 *Gauging, venting, loading and unloading, and air inlet devices extending through domes of tanks.* (a) Not specification requirements. When installed these devices must be of an approved design, made of material not subject to rapid deterioration by the lading, and be tightly closed. Protective housing not required, except as prescribed in paragraph (b) of this section. Unloading pipe must be securely anchored within the tank.

(b) When the characteristics of the commodity for which the car is authorized are such that these devices must be equipped with valves to provide for the loading and unloading of the contents, these devices including valves must be of an approved design and be provided with a protective housing. Provision must be made for closing pipe connections of valves.

§ 78.298–14 *Bottom outlets.* (a) Bottom outlet is prohibited, but tank may be equipped with a bottom washout nozzle of metal not subject to rapid deterioration by the lading, which must be of approved construction complying with the following requirements.

(b) The construction and closure of the bottom washout nozzle must be such that it is liquid tight and should the nozzle be broken, loss of contents will not occur.

(c) The extreme projection of the bottom washout nozzle must be at least 12 inches above the top of rail.

(d) Bottom washout nozzle may be of cast, fabricated, or forged metal and must be of good weldable quality in conjunction with metal of tank.

(e) The closure of the washout nozzle must be equipped with a ¾ inch solid screw plug. Plug must be secured to car structure or washout chamber by at least a ¼ inch chain.

(f) For bottom washout nozzles that project 6 inches or more from shell of tank, a "V" groove must be cut (not cast) in the upper part of bottom washout nozzle at a point immediately below lowest part of inside closure seat to a depth that will leave thickness of nozzle wall at the root of the "V" not over ⅜ inch. Where bottom washout nozzle is not a single piece, arrangement must be made to provide the equivalent of the breakage groove.

(g) The flange on the bottom washout nozzle must be of a thickness which will prevent distortion on the inside closure seat or closure casting by any change in contour of the shell, resulting from expansion of lading, or other causes, and which will insure that accidental breakage of the washout nozzle will occur at or below the "V" groove.

(h) The closure casting must not project below the "V" groove in the washout nozzle. The closure casting and seat must be readily accessible for repairs, including grinding.

§ 78.298–15 *Safety valves.* (a) The tank must be equipped with one or more safety valves of approved design at least 2 inches inside diameter mounted on top of expansion dome. Total valve discharge capacity must be sufficient to prevent building up pressure in tank in excess of 45 pounds per square inch.

(b) One or more safety valves must be provided for each tank or compartment thereof.

(c) The safety valve must be set to open at a pressure of 35 pounds per square inch and be vapor-tight at 28 pounds per square inch. For tolerance see § 78.298–20 (a).

(d) Tanks used for the transportation of corrosive liquids, flammable solids, oxidizing materials, or poisonous liquids or solids, class B, need not be equipped with safety valves, but if not so equipped must have 1 safety vent at least 1¾ inches inside diameter closed with a frangible disc of lead or other suitable material of a thickness that will rupture at not more than 45 pounds per square inch. Means for holding disc in place must be such as to prevent distortion or damage to disc when applied. Safety vent closure must be chained or otherwise fastened to prevent misplacement. All tanks equipped with vents must be stenciled "Not for Flammable Liquids".

(e) Safety valve or safety vent flanges must be of cast, forged, or fabricated metal not subject to rapid deterioration by the lading, and be of good weldable quality in conjunction with metal of dome.

§ 78.298–16 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) All attachments to tank and dome must be applied by welding. Interior heater systems, when installed, must be so constructed that the breaking off of their external connections will not cause leakage of the contents of the tank.

§ 78.298–17 *Interior heater systems.* (a) See §§ 78.260 and 78.261, heater systems.

(b) Interior heater systems and plug flanges must be of cast, forged or fabricated material complying with the requirements of § 78.298–5 (a) or (b), whichever applies.

§ 78.298–18 *Closures for openings.* (a) All plugs must be solid, made of materials not subject to rapid deterioration by the lading, with standard pipe thread, and must be of a length which will screw at least 6 threads inside the face of fitting or tank. Plugs, when inserted from the outside of tank heads must have the letter "S" at least ⅜ inch in size stamped with steel stamp or cast on the outside surface to indicate the plug is solid.

§ 78.298–19 *Tests of tanks.* (a) Each tank must be tested, before being put into service, by completely filling the tank and dome with water, or other liquid having similar viscosity, of a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 60 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All closures, except safety valves or vents, must be in place while test is made.

(b) If tanks are to be lagged, the test of tank must be made before lagging is applied.

(c) Calking of welded joints to stop leaks developed during the foregoing tests prohibited. Repairs in welded joints must be made as prescribed in § 78.298–7 (a).

(d) Tests of interior heater systems. Before interior heater systems are placed in service they must be tested with hydrostatic pressure and must be tight at 200 pounds per square inch.

§ 78.298–20 *Tests of safety valves.* (a) Valve must be tested before being put into service, by attaching an air line and applying pressure. The valve must open at the pressure prescribed in § 78.298–15 (c) with a tolerance of plus or minus 3 pounds.

§ 78.298–21 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–103E–W and specification number of material used in tank shell and expansion dome in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. ICC–103E–W must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph by the party assembling the completed car. These marks must also be stenciled on the tank, or jacket if lagged, in letters and figures at least

2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(6) Date on which interior heater systems were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(7) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only," or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the tank, or jacket if lagged, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.298–22 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish the car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of, or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

43. Add § 78.299 (15 F. R. 8523, Dec. 2, 1950) (49 CFR 78.299, 1950 Rev.) to read as follows:

§ 78.299 *Specification ICC–103A–N–W; fusion welded nickel or nickel alloy tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.299–1 *Type.* (a) Tanks built under this specification must be cylindrical, with heads designed convex outward, and must have at least 1 expansion dome with manway, and such other external projections as are prescribed herein. When the interior of the tank is divided into compartments, each compartment must have 2 heads designed convex outward, 1 expansion dome with manway, and such other external projections as are prescribed herein.

§ 78.299–2 *Lagging.* (a) Not a specification requirement. If applied, the tank shell and expansion dome must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to exterior of tank, the lagging over each heater element may be reduced in thickness.

(b) Before lagging is applied, the inside surface of the metal jacket shall be given a protective coating.

§ 78.299–3 *Bursting pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint, must be at least 240 pounds per square inch.

§ 78.299–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula but in no case shall the wall thickness be less than that specified in paragraph (b) of this section:

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal welded joint = 90 percent.

(1) The thickness of a dished head must be determined by the following formula, but in no case be less than that specified in paragraph (b) of this section:

$$t=\frac{5PL}{6SE}$$

where

t = thickness of plate in inches;
P = calculated bursting pressure pounds per square inch;
L = main inside radius to which head is dished measured on concave side in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of welded joint.

When head is formed from one piece, the efficiency may be considered as 100 percent.

(b) The minimum thickness of plates must be as follows:

Inside diameter of tanks	Bottom sheets	Shell sheets	Expansion dome sheets	Tank heads	Expansion dome heads	Interior compartment heads
	Inch	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
60 inches or under	7/16	¼	5/16	½	5/16	5/16
Over 60 to 78 inches	7/16	5/16	5/16	½	5/16	5/16
Over 78 to 96 inches	½	3/8	5/16	½	5/16	3/8
Over 96 to 112 inches	½	7/16	5/16	9/16	5/16	7/16
Over 112 to 122 inches	½	½	5/16	5/8	5/16	½

(c) The minimum width of bottom sheet of tank must be 60 inches, measured on the arc, but in all cases the width must be sufficient to bring the entire width of the longitudinal welded joint, including welds, above the cradle.

(d) For tanks built of 1 piece cylindrical sections, the thickness specified for bottom sheet must apply to the entire cylindrical shell.

(e) When tank is divided into compartments the interior heads must comply with the requirements for interior compartment heads prescribed herein. When capacity of tank is reduced by moving in the exterior head a new exterior head of approved contour not less than ⅜ inch thickness must be applied. When the capacity is reduced by the insertion of a new interior head this head must comply with the requirements for interior compartment heads and the exterior head reapplied. Voids, created by the addition of heads for division into compartments or reduction in capacity, must be provided with a tapped drain hole at their lowest point, and a tapped hole at top of tank. The top hole must be closed, and the bottom hole may be closed, with not less than ¾ inch nor more than 1½ inch solid pipe plugs having standard pipe threads.

§ 78.299–5 *Material.* (a) All plates for tank and expansion dome must be made of nickel or nickel alloy to an approved specification.

(b) All castings used for fittings or attachments to tank must be made of material to an approved specification.

(c) All external projections must be made of materials specified herein.

§ 78.299–6 *Tank heads.* (a) Tank heads must be of approved contour and must be designed for pressure on concave side and to main inside radius not exceeding 10 feet. The inside knuckle radius must not be less than 3¾ inches except for interior heads of compartment tanks the knuckle radius must not be less than 1½ inches.

§ 78.299–7 *Welding.* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with requirements of AAR Welding Code Appendix "W".

§ 78.299–8 *Manway rings, safety vent flange, and bottom washout nozzle flange or other attachments.* (a) These attachments must be fusion-welded. Fusion-welding for securing these attachments in place must be of the double-welded butt joint type or double-full-fillet-lap joint type.

§ 78.299–9 *Stress relieving or heat treatment.* (a) Not a specification requirement.

§ 78.299–10 *Tank mounting.* (a) The manner in which the tank is supported on and securely attached to the car structure must be approved.

(b) The use of rivets as a means of securing anchor to tank is prohibited.

§ 78.299–11 *Expansion dome.* (a) The expansion dome must have a capacity measured from the inside top of shell of tank to the inside top of dome or bottom of any vent pipe projecting inside of dome, of at least 1 percent of the total capacity of the tank and dome combined.

(b) The opening for manway must be at least 16 inches in diameter. The opening in the tank shell within the dome must be at least 29 inches in diameter. When the opening in the tank shall exceeds 30 inches in diameter, the opening must be reinforced in an approved manner. When the opening in the tank shell is less than the inside diameter of the dome, dome pocket drain holes must be provided in the tank shell with nipples extending inside the tank at least 1 inch.

(c) The dome head must be of approved contour and must be designed for pressure on concave side.

§ 78.299–12 *Closures for manway.* (a) The manway cover must be of bolted type, bolted and hinged type, or other approved types, and designed to provide a secure closure of the manway.

(b) Manway covers must be made of cast, forged or fabricated nickel or nickel alloy. Manway rings must be made of cast, forged or fabricated nickel or nickel alloy and be of good weldable quality in conjunction with the metal of the dome.

(c) Chains, if used to attach manway covers to outside of dome head, must be at least ⅜ inch or its equivalent.

(d) All joints between manway covers and their seats must be made tight against leakage of vapor and liquid by use of gaskets of suitable material.

§ 78.299–13 *Gauging, venting, loading and unloading, and air inlet devices extending through domes of tanks.* (a) Not specification requirements. When installed these devices must be of an approved design, made of material not subject to rapid deterioration by the lading, and be tightly closed. Protective housing is not required, except as prescribed in paragraph (b) of this section. Unloading pipe must be securely anchored within the tank.

(b) When the characteristics of the commodity for which the car is authorized are such that these devices must be equipped with valves to provide for the loading and unloading of the contents, these devices including valves must be of an approved design and be provided with a protective housing. Provision must be made for closing pipe connections of valves.

§ 78.299–14 *Bottom outlets.* (a) Bottom outlet is prohibited, but tank may be equipped with a bottom washout nozzle of metal not subject to rapid deterioration by the lading, which must be of approved construction complying with the following requirements.

(b) The construction and closure of the bottom washout nozzle must be such that it is liquid tight and should the nozzle be broken, loss of contents will not occur.

(c) The extreme projection of the bottom washout nozzle must be at least 12 inches above the top of rail.

(d) Bottom washout nozzle may be of cast, fabricated, or forged metal and must be of good weldable quality in conjunction with metal of tank.

(e) The closure of the washout nozzle must be equipped with a ¾ inch solid screw plug. Plug must be secured to car structure or washout chamber by at least a ¼ inch chain.

(f) For bottom washout nozzles that project 6 inches or more from shell of tank, a "V" groove must be cut (not cast) in the upper part of bottom washout nozzle at a point immediately below lowest part of inside closure seat to a depth that will leave thickness of nozzle wall at the root of the "V" not over ⅜ inch. Where bottom washout nozzle is not a single piece, arrangement must be made to provide the equivalent of the breakage groove.

(g) The flange on the bottom washout nozzle must be of a thickness which will prevent distortion of the inside closure seat or closure casting by any change in contour of the shell, resulting from expansion of lading, or other causes, and which will insure that accidental breakage of the washout nozzle will occur at or below the "V" groove.

(h) The closure casting must not project below the "V" groove in the washout nozzle. The closure casting and seat must be readily accessible for repairs, including grinding.

§ 78.299–15 *Safety vents.* (a) Safety valves are prohibited, but a safety vent must be applied.

(b) Each tank or compartment thereof must be equipped with 1 safety vent at least 1¾ inches inside diameter closed with a frangible disc of lead or other suitable material of a thickness that will rupture at not more than 45 pounds per square inch. Means for holding disc in place must be such as to prevent distortion or damage to disc when applied. Safety vent closure must be chained or otherwise fastened to prevent misplacement.

(c) Safety vent flanges, if welded to dome, must be of cast, forged, or fabricated metal and be of good weldable quality in conjunction with metal of dome.

§ 78.299–16 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) All attachments to tank and dome must be applied by approved means. Interior heater ssytems, when installed, must be so constructed that the breaking off of their external connections will not cause leakage of contents of tank.

§ 78.299–17 *Interior heater systems.* (a) See §§ 78.260 and 78.261, heater systems.

(b) Interior heater systems and plug flanges, if welded to tank or dome must be of cast, forged or fabricated metal and be of good weldable quality in conjunction with metal of tank or dome.

§ 78.299–18 *Closures for openings.* (a) All plugs must be solid, of good grade cast nickel or equivalent, with standard pipe threads of a length which will screw at least 6 threads inside the face of fitting or tank. Plugs, when inserted from the outside of tank heads, must have the letter "S" at least ⅜ inch in size stamped with steel stamp or cast on the outside surface to indicate the plug is solid.

§ 78.299–19 *Tests of tanks.* (a) Each tank must be tested, before being put into service, by completely filling the tank and dome with water, or other liquid having similar viscosity, of a temperature which must not exceed 100 degrees Fahrenheit during the test, and applying a pressure of 60 pounds per square inch. Tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All closures, except safety valves or vents, must be in place while test is made.

(b) If tanks are to be lagged, the test of tank must be made before lagging is applied.

(c) Calking of welded joints to stop leaks developed during the foregoing tests prohibited. Repairs in welded joint must be made as prescribed in § 78.299–7 (a).

(d) Tests of interior heater systems. Before interior heater systems are placed in service they must tested with hydrostatic pressure and must be tight at 200 pounds per square inch.

§ 78.299–20 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–103A–N–W and specification number of material used in tank shell and expansion dome in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. ICC–103A–N–W must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph, by the party assembling the completed car. These marks must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank, or jacket if lagged.

(5) Date on which the interior heater systems were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the tank or jacket if lagged.

(6) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that com-

modity followed by the word "only" or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the tank, or jacket if lagged, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.299–21 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish the car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs, to, alterations of, or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and car owner.

44. Add § 78.300 (15 F. R. 8523, Dec. 2, 1950) (49 CFR 78.300, 1950 Rev.) to read as follows:

§ 78.300 *Specification ICC–105A300–AL–W; lagged fusion-welded aluminum tanks to be mounted on or forming part of a car.* (a) Wherever the word "approved" is used in this specification, it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.300–1 *Type.* (a) Tanks built under this specification must be cylindrical with heads designed convex outward. The tank must be provided with a manway nozzle and cover on top of the tank of sufficient diameter to permit access to the interior of the tank and to provide for the proper mounting of venting, loading, unloading, sampling and safety valves, gauging device, thermometer well, and a protective housing on the cover. Other openings in the tank are prohibited.

§ 78.300–2. *Lagging.* (a) The tank shell and manway nozzle must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.075 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to the exterior of the tank, the lagging over each heater element may be reduced in thickness equivalent to ½ that required for the shell.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.300–3 *Bursting pressure.* (a) The calculated bursting pressure based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint, must be at least 750 pounds per square inch.

§ 78.300–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank must be calculated by the following formula, but in no case shall the wall thickness be less than that specified in § 78.300–4 (c):

$$t=\frac{Pd}{2SE}$$

where

t = thickness in inches of thinnest plate;
P = calculated bursting pressure, pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch as follows:

ASTM B–178 Alloy GR20A = 25,000 p. s. i.
ASTM B–178 Alloy GS11A = 24,000 p. s. i.
ASTM B–178 Alloy GR40A = 30,000 p. s. i.

E = efficiency of longitudinal welded joint = 90 percent.

(b) The thickness of an ellipsoidal head shall be determined by the following formula:

$$t=\frac{Pd}{2SE}$$

where

t = thickness of plate in inches;
P = calculated bursting pressure pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of welded joint to shell = 100 percent.

(c) The minimum thickness of plates and heads must be ¾ inch.

§ 78.300–5 *Manway nozzle opening.* (a) Opening in tank for manway nozzle must be reinforced in an approved manner.

§ 78.300–6 *Material.* (a) All plates for tank and manway nozzle must be of an aluminum alloy to an approved specification and be suitable for fusion-welding and not subject to rapid deterioration by the lading.

(b) Aluminum alloy castings used for fittings or attachments to tank must be made of material to an approved specification.

(c) All external projections which may be in contact with the lading must be made of material specified herein.

§ 78.300–7 *Tank heads.* (a) Tank heads must be of approved contour and must be ellipsoidal for pressure on concave side.

(b) Ellipsoidal tank head shall be an ellipsoid of revolution in which the major axis shall equal the diameter of the shell and the minor axis shall be ½ the major axis.

§ 78.300–8 *Welding.* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with the requirements of A. A. R. Welding Code Appendix W.

§ 78.300–9 *Stress-relieving.* (a) Not a specification requirement.

§ 78.300–10 *Tank mounting.* (a) The manner in which the tank is supported on and securely attached to the car structure must be approved.

(b) The use of rivets as a means of securing anchor to tank is prohibited.

§ 78.300–11 *Manway nozzle, cover and protective housing.* (a) Manway nozzle must be of forged, pressed or fabricated aluminum alloy at least 18 inches inside diameter. Manway nozzle must be of approved design and attached to tank by fusion-welding. Fusion-welding for securing this attachment in place must be of the double-welded butt joint type.

(b) Manway cover must be of forged or rolled aluminum alloy at least 2⅝ inches thick, or other approved material at least 2¼ inches thick machined to approved dimensions. Manway cover must be attached to manway nozzle by through or stud bolts not entering tank.

(c) The shearing value of the bolts attaching protective housing to manway cover must not exceed 70 percent of shearing value of bolts attaching manway cover to manway nozzle.

(d) All joints between manway cover and manway nozzle, and between manway cover and valves or other appurtenances mounted thereon, must be made tight against vapor pressure.

(e) Protective housing of cast or fabricated steel, or other approved material, must be bolted to manway cover. Housing must be equipped with a suitable metal cover that can be securely closed. Housing cover on tanks used for the transportation of liquefied flammable gases must be provided with an opening equipped with an approved weatherproof covering and having an area at least equal to the total safety valve discharge area. Housing cover must have suitable stop to prevent cover striking loading or unloading connections and be hinged on one side only with approved riveted pin, rod with nuts and cotters or rod with suitable washers welded on ends. Openings in wall of housing must be equipped with screw plugs or other closures.

§ 78.300–12 *Venting, loading and unloading valves, gauging and sampling device and thermometer well.* (a) Venting, loading and unloading valves must be of approved type, made of metal not subject to rapid deterioration by lading, and must withstand a pressure of 300 pounds per square inch without leakage. The valves must be directly bolted to seatings on manway cover. Pipe connections of the valves must be closed with approved screw plugs chained or otherwise fastened to prevent misplacement.

(b) The interior plugs of the loading and unloading valves, except as prescribed in paragraph (d) of this section, may be equipped with excess flow valves of an approved design.

(c) Gauging device, sampling valve and thermometer well are not specification requirements. When used, they must be of approved design, made of metal not subject to rapid deterioration by lading and must withstand a pressure

of 300 pounds per square inch without leakage. Interior pipes of the gauging device and sampling valve, except as prescribed in paragraph (d) of this section, may be equipped with excess flow valves of an approved design. Interior pipe of thermometer well must be anchored in an approved manner to prevent breakage due to vibration. The thermometer well must be closed by an approved valve attached close to the manway cover and closed by a screw plug. Other approved arrangements that permit testing thermometer well for leaks without complete removal of the closure may be used.

(d) Tanks used for the transportation of liquefied flammable gases must have the interior pipes of the loading and unloading valves, gauging device and sampling valve equipped with excess flow valves of an approved design.

§ 78.300–13 *Safety valves.* (a) The tank must be equipped with one or more safety valves of approved design, made of metal not subject to rapid deterioration by the lading and mounted on manway cover. The total valve discharge capacity must be sufficient to prevent building up of pressure in tank in excess of 225 pounds per square inch.

(b) The safety valves must be set to open at a pressure of not exceeding 225 pounds per square inch. (For tolerance see § 78.300–17 (a).)

§ 78.300–14 *Fixtures, reinforcements, and attachments not otherwise specified.* (a) Attachments, other than the anchorage, interior pipe bracing and those mounted on the manway nozzle and cover, are prohibited. Heater systems may be applied to exterior of tank by tank bands or other approved method.

§ 78.300–15 *Closures for openings.* (a) Plugs must be of approved type, with standard pipe thread, and of metal not subject to rapid deterioration by the lading.

§ 78.300–16 *Tests of tanks.* (a) Each tank must be tested, after anchorage is applied and before tank lagging is applied, by completely filling the tank and manway nozzle with water or other liquid of similar viscosity, having a temperature which must not exceed 100 degrees Fahrenheit during test, and applying a pressure of 300 pounds per square inch. The tank must hold the prescribed pressure for at least 30 minutes without leakage or evidence of distress. All closures, except safety valves, must be in place while test is made.

(b) Calking of welded joints to stop leaks developed during the foregoing tests prohibited. Repairs in welded joints must be made as prescribed in § 78.300–8 (a).

(c) Tests of exterior heater systems are not a specification requirement.

§ 78.300–17 *Tests of safety valves.* (a) Each valve must be tested by air or gas before being put into service. The valve must open at a pressure not exceeding 225 pounds per square inch and be vapor tight at 180 pounds per square inch, which limiting pressures must not be affected by any auxiliary closure or other combination.

§ 78.300–18 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification. These marks must be as follows:

(1) ICC–105A300AL–W and specification number of material used in tank shell and manway nozzle in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads of the tank by the tank builder. ICC–105A-300AL–W must also be stenciled on the jacket in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph, by the party assembling the completed car. These marks must also be stenciled on the jacket in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, place where test was made, and by whom, stenciled on the jacket.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(6) Water capacity of the tank in pounds stamped plainly and permanently in letters and figures at least ⅜ inch high into the metal of the tank immediately below the mark specified in subparagraph (2) and (3) of this paragraph. This mark must also be stenciled on the jacket immediately below the dome platform and either directly behind or within 3 feet of the right or left side of ladder, or ladders, if there is a ladder on each side of the tank, in letters and figures at least 2 inches high as follows:

WATER CAPACITY
000000 POUNDS

(7) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the jacket, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

§ 78.300–19 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to the car owner, Bureau of Explosives, and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and numbers of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and the car owner.

45. Add § 78.301 (15 F. R. 8523, Dec. 2, 1950) (49 CFR 78.301, 1950 Rev.) to read as follows:

§ 78.301 *Specification ICC–109A300–W; fusion welded steel tanks to be mounted on or forming a part of a car.* (a) Wherever the word "approved" is used in this specification it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 78.259 (a), (b), (c) and (d).

§ 78.301–1 *Type.* (a) Tanks built under this specification must be cylindrical with heads designed convex outward. The tank must be provided with a manway nozzle and cover on top of the tank of sufficient diameter to permit access to the interior of the tank, and to provide for the proper mounting of venting, loading, unloading, sampling and safety valves, gauging device, thermometer well and a protective housing on the cover.

§ 78.301–2 *Lagging.* (a) Not a specification requirement. If applied, the tank shell and manway nozzle must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.225 B. t. u. per square foot, per degree Fahrenheit differential in temperature per hour at 60 degrees. The entire insulation must be covered with a metal jacket not less than ⅛ inch in thickness and efficiently flashed around all openings so as to be weather tight. When heater systems are attached to exterior of tank, the lagging over each heater element may be reduced in thickness.

(b) Before lagging is applied, the tank surface and the inside surface of the metal jacket shall be given a protective coating.

§ 78.301–3 *Bursting-pressure.* (a) The calculated bursting pressure, based on the lowest tensile strength of the plate and the efficiency of the longitudinal welded joint, must be at least 750 pounds per square inch.

§ 78.301–4 *Thickness of plates.* (a) The wall thickness in the cylindrical portion of the tank and tank heads must be calculated by the following formula; but in no case shall the wall thickness be less than that specified in § 78.301–4 (b):

$$t=\frac{Pd}{2SE}$$

where
t = thickness in inches of thinnest plate;
P = calculated bursting pressure in pounds per square inch;
d = inside diameter in inches;
S = minimum ultimate tensile strength in pounds per square inch;
E = efficiency of longitudinal welded joint = 90 percent.

(b) The minimum thickness of plates must be $^{11}/_{16}$ inch.

(c) The minimum thickness of clad plates, where cladding material has physical properties at least equal to that of the base plate prescribed in § 78.301–6 (a), must be as prescribed in paragraph (b) of this section. Where the cladding material does not have physical properties at least equal to that of the base plate prescribed in § 78.301–6 (a), minimum thickness of base plate must be as prescribed in paragraph (b) of this section.

§ 78.301–5 *Manway nozzle opening.* (a) Opening in tank for manway nozzle must be reinforced in an approved manner.

§ 78.301–6 *Material.* (a) All plates for tank and manway nozzle must be made of open hearth boiler-plate flange quality steel to an approved specification, the carbon content of which shall not exceed 0.31 percent. These plates may also be clad with other metals such as nickel.

(b) All castings used for fittings or attachments to tank must be of material to an approved specification. The use of cast iron is prohibited.

(c) All external projections must be made of materials specified herein.

(d) Lining or interior coating is not a specification requirement. If applied, it must be approved as to material.

§ 78.301–7 *Tank heads.* (a) The tank head shape shall be an ellipsoid of revolution in which the major axis shall equal the diameter of the shell and the minor axis shall be ½ the major axis.

§ 78.301–8 *Welding.* (a) All joints must be fusion-welded by a process which investigation and laboratory tests by the Mechanical Division of the Association of American Railroads have proved will produce satisfactory results. Fusion-welding to be performed by fabricators certified by Association of American Railroads as qualified to meet the requirements of this specification. All joints must be fabricated by means of fusion-welding in accordance with the requirements of A. A. R. Welding Code Appendix W.

§ 78.301–9 *Stress-relieving.* (a) All welding of the tank shell and of attachments welded directly thereto must be stress-relieved as a unit.

§ 78.301–10 *Tank mounting.* (a) The manner in which the tank is supported on and securely attached to the car structure must be approved.

(b) The use of rivets as a means of securing anchor to tank is prohibited.

§ 78.301–11 *Manway nozzle, cover and protective housing.* (a) Manway nozzle must be of forged or rolled steel at least 18 inches inside diameter. Manway nozzle must be of approved design and attached to tank by fusion-welding. Fusion-welding for securing this attachment in place must be of the double-welded butt joint type or double full-fillet lap joint type.

(b) Manway cover must be forged or rolled steel at least 2¼ inches thick machined to approved dimensions. Manway cover must be attached to manway nozzle by through or stud bolts not entering tank.

(c) The shearing value of the bolts attaching protective housing to manway cover must not exceed 70 percent of shearing value of bolts attaching manway cover to manway nozzle.

(d) All joints between manway cover and manway nozzle, and between manway cover and valves or other appurtenances mounted thereon, must be made tight against vapor pressure.

(e) Protective housing of cast or fabricated steel must be bolted to manway cover. Housing must be equipped with a a suitable metal cover that can be securely closed. Housing cover must have a suitable stop to prevent cover striking loading or unloading connections and be hinged on one side only with an approved riveted pin or rod with nuts and cotters. Openings in wall of housing must be equipped with screw plugs or other closures.

§ 78.301–12 *Venting, loading and unloading valves, gauging and sampling device, and thermometer well.* (a) Venting loading and unloading valves must be of approved type, made of metal not subject to rapid deterioration by lading, and must withstand a pressure of 300 pounds per square inch without leakage. The valves must be directly bolted to seatings on manway cover. Pipe connections of the valves must be closed with approved screw plugs or otherwise fastened to prevent misplacement.

(b) The interior pipes of the loading and unloading valves, sampling valve and gauging device may be equipped with excess flow valves of an approved design.

(c) Gauging device, sampling valve and thermometer well are not specification requirements. When used they must be of approved design, made of metal not subject to rapid deterioration by the lading, and must withstand a pressure of 300 pounds per square inch without leakage. Interior pipe of thermometer well must be anchored in an approved manner to prevent breakage due to vibration. The thermometer well must be closed by an approved valve attached close to the manway cover and closed by a screw plug. Other approved arrangements that permit testing thermometer well for leaks without complete removal of the closure may be used.

§ 78.301–13 *Bottom outlets.* (a) Bottom outlet for discharge of lading is prohibited, but tank may be equipped with a bottom washout of metal not subject to rapid deterioration by the lading, which must be of approved construction complying with the following requirements:

(1) The extreme projection of the bottom washout must be at least 12 inches above the top of rail.

(2) Bottom washout nozzle must be of cast, forged or fabricated metal of good weldable quality in conjunction with the metal of the tank, and must be applied by welding.

(3) The bottom washout must be designed and constructed with a double closure, each capable of withstanding 300 pounds per square inch test pressure and 225 pounds per square inch working pressure without leakage. The inside or top closure must be such that loss of lading will not occur should the nozzle be broken, and preferably should consist of a plug with a tapered seat so that any tank pressure will effect tight closure independent of means of securing the plug. The outside or bottom closure must be a flange with a test plug not larger than ¾ inch pipe plug. Flange and plug must be chained to prevent loss.

(4) For bottom washout nozzles that project 6 inches or more from shell of tank, a "V" groove must be cut (not cast) in the upper part of bottom washout nozzle at a point immediately below lowest part of inside closure seat to a depth that will leave thickness of nozzle wall at the root of the "V" not over ⅜ inch. Where bottom washout nozzle is not a single piece, arrangement must be made to provide the equivalent of the breakage groove.

(5) The opening in the tank bottom for the bottom washout nozzle must be reinforced in an approved manner, and the washout nozzle must be of a thickness to insure that accidental breakage will occur at or below the "V" groove.

(6) The closure casting must not project below the "V" groove in the washout nozzle. The closure casting and seat must be readily accessible for repairs, including grinding.

(7) Joints between closures and their seats may be gasketed with suitable material.

§ 78.301–14 *Safety valves.* (a) The tank must be equipped with one or more safety valves of approved design, made of metal not subject to rapid deterioration by lading and mounted on manway cover. The safety valve must be set to open at a pressure of not exceeding 225 pounds per square inch. (For tolerance see § 78.301–18 (a).)

§ 78.301–15 *Fixtures, reinforcements and attachments not otherwise specified.* (a) All attachments to tank and nozzle must be applied by approved means. Heater systems may be applied to exterior of tank by tank bands or other approved method.

§ 78.301–16 *Closures for openings.* (a) Plugs must be of an approved type, with standard pipe thread, and of metal not subject to rapid deterioration by the lading.

§ 78.301–17 *Tests of tanks.* (a) Each tank must be tested, after anchorage is applied and before tank lagging is applied, by completely filling the tank and manway nozzle with water or other liquid of similar viscosity, having a temperature which must not exceed 100 degrees Fahrenheit during test, and applying a pressure of 300 pounds per square inch. The tank must hold the prescribed pressure for at least 30 minutes without leakage or evidence of distress.

(b) Calking of welded joints to stop leaks developed during the foregoing

tests is prohibited. Repairs in welded joints must be made as prescribed in § 78.301–8 (a).

(c) Tests of exterior heater systems are not a specification requirement.

§ 78.301–18 *Tests of safety valves.* (a) Each valve must be tested by air or gas before being put into service. The valve must open at a pressure not exceeding 225 pounds per square inch and be vapor tight at 180 pounds per square inch, which limiting pressure must not be affected by an auxiliary closure or other combination.

§ 78.301–19 *Marking.* (a) Each tank must be marked, thus certifying that the tank complies with all the requirements of this specification as follows:

(1) ICC–109A300–W in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal near the center of both outside heads by the tank builder. This mark must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high by the party assembling the completed car.

(2) Initials of tank builder and date of original test of tank in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (1) of this paragraph.

(3) Initials of company and date of additional tests performed by the party assembling the completed car, in those cases where the tank builder does not complete the fabrication of tank, in letters and figures at least ⅜ inch high stamped plainly and permanently into the metal immediately below the stamped marks specified in subparagraph (2) of this paragraph by the party assembling the completed car. These marks must also be stenciled on the tank, or jacket if lagged, in letters and figures at least 2 inches high immediately below the stenciled mark specified in subparagraph (1) of this paragraph by the party assembling the completed car.

(4) Date on which the tank was last tested, pressure to which tested, place where test was made, and by whom stenciled on the tank, or jacket if lagged.

(5) Date on which the safety valves were last tested, pressure to which tested, place where test was made, and by whom, stenciled on the jacket.

(6) Water capacity of the tank in pounds stamped plainly and permanently in letters and figures at least ⅜ inch high into the metal of the tank immediately below the mark specified in subparagraph (3) of this paragraph. This mark must also be stenciled on the tank, or jacket if lagged, immediately below the dome platform and either directly behind or within 3 feet of the right or left side of the ladder on each side of the tank, in letters and figures at least 2 inches high as follows:

WATER CAPACITY
000000 POUNDS

(7) When a tank car and its appurtenances are designed and authorized for the transportation of a particular commodity only, the name of that commodity followed by the word "only", or such other wording as may be required to indicate the limits of usage of the car, must be stenciled on each side of the tank, or jacket if lagged, in letters at least 1 inch high, immediately above the stenciled mark specified in subparagraph (1) of this paragraph.

(8) Tanks made of clad plates must be stenciled on the tank, or jacket if lagged, "_____ (naming material) clad tank." Lined tanks must be stenciled on the tank, or jacket if lagged, "_____ (naming material) lined tank." These marks must be stenciled in letters at least 2 inches high, immediately above stenciled mark specified in subparagraph (7) of this paragraph.

§ 78.301–20 *Reports.* (a) Before a tank car is placed in service, the party assembling the completed car must furnish to car owner and the Secretary, Mechanical Division, Association of American Railroads, a report in approved form certifying that the tank and its equipment comply with all the requirements of this specification. In case of welded repairs to, alterations of or additions to tanks or equipment from original design and construction, all of which must be approved, there must be furnished to the same parties a report in detail of the welded repairs, alterations or additions made to each tank covered by a particular application, showing the initials and number of each tank involved. Reports of retests must be rendered to the Bureau of Explosives and the car owner.

46. Cancel entire Appendices A, B, C, and D (20 F. R. 8111, 8112, Oct. 28, 1955) (19 F. R. 1286, 1287, Mar. 6, 1954) (17 F. R. 7288, 7289, Aug. 9, 1952) (16 F. R. 5340, 5341, June 6, 1951) (19 F. R. 3265, June 3, 1954) (15 F. R. 8523 to 8543, Dec. 2, 1950) (49 CFR 1950 Rev., 1954 Supp., Part 78 Appendices A, B, C, and D).

APPENDIX

Section	*Reason for Amendment*
73.31 (a) and Notes	Table amended to include additional references necessitated by complete revision of tank car specifications and proposed adoption of numerous modified procedures.
73.31 (c)	New procedure will require reference to Appendix R of AAR Code for repairs to tank cars.
73.31 (f)	Obsolete specifications to be eliminated and two new ones provided for.
73.31 (g)	Retest requirements consolidated in one place and substantially clarified.
73.31 (h)	Amended to include five additional tank car designs.
73.31 (l) (1), Note 1	Canceled account further extension of time to replace defective safety valves is not warranted.
73.119 (a) (12)	Amended to include new or revised specifications.
73.119 (a) (13)	The special order under which certain cars are operated will limit use of cars without publication in the regulations.
73.119 (a) (18)	Same as § 73.119 (a) (13).
73.119 (e) (2)	To provide for additional and new specification tank cars.
73.119 (f) (3)	To provide for certain cars under new specification designation.
73.123 (a) (5)	Same as § 73.119 (f) (3).
73.124 (a) (5) and Note 1	Same as § 73.119 (f) (3).
73.124 (a) (6)	Same as § 73.119 (f) (3).
73.247 (a) (11)	To limit unstabilized anhydrous benzyl chloride to tanks of solid nickel construction.
73.247 (a) (13)	To clarify precautions in selecting tank cars for certain chlorides.
73.249 (a) (5)	To provide for certain cars under new specification designation.
73.254 (a) (4)	To allow use of a new specification tank car for chloro sulfonic acid and certain mixtures.
73.263 (a) (9)	To eliminate reference to obsolete tank car specifications for hydrochloric acid and certain mixtures.
73.264 (a) (8)	Same as § 73.249.
73.264 (a) (13)	Cancels reference to obsolete tank car specifications.
73.265 (a) (4)	Cancels reference to obsolete tank car specifications.
73.268 (b) (1)	To provide new specification tank car for certain nitric acid.
73.268 (b) (2)	Cancels reference to cars operated by special order.
73.268 (c) (2)	Limits use of 103A–AL–W tank cars to certain types of nitric acid.
73.271 (a) (7)	Provides for additional new tank car for certain chlorides.
73.272 (h) (3)	Clarifies type of safety vents required for certain acids.
73.289 (a) (2)	To provide additional tank car for formic acid and solutions.
73.291 (a) (8)	Eliminates reference to obsolete tank cars.
73.314 (a) table, and Note 2.	Same as § 73.249 (a) (5).
73.314 (a) table, Note 9	To clarify that excess flow valves required for all tank cars used for liquefied flammable gases.
73.314 (b)	Same as § 73.249 (a) (5).
73.346 (a) (10)	Same as § 73.249 (a) (5).
73.353 (a) (5) and (b)	Same as § 73.249 (a) (5).
78.256 (a)	Text of preface amended to repeat essential information.
78.257 (a)	Repeated for clarity to complete revision.
78.258 (a)	To eliminate reference to AAR specifications.
78.259, entire section	Amended to correspond with new specification requirements.
78.260, entire section	Amended to correspond with new specification requirements.
78.262, entire section	Deleted account not specification requirements.
78.263, entire section	Deleted account not specification requirements.
78.265, entire section	Revises specification ICC–103.
78.266, entire section	Revises specification ICC–103A.
78.267, entire section	Revises specification ICC–103B.

Section	Reason for Amendment
78.268, entire section	Cancels obsolete specification ICC–103C.
78.269, entire section	Revises specification ICC–104.
78.270, entire section	Provides new specification ICC–105A100 to replace specification ICC–104A.
78.271, entire section	Cancels obsolete specification ICC–105A300.
78.272, entire section	Cancels obsolete specification ICC–105A400.
78.273, entire section	Cancels obsolete specification ICC–105A500.
78.274, entire section	Cancels obsolete specification ICC–105A600.
78.275, entire section	Revises specification ICC–106A500.
78.276, entire section	Revises specification ICC–106A800.
78.277, entire section	Revises specification ICC–107A.
78.278, entire section	Cancels obsolete specification ICC–108.
78.279, entire section	Cancels obsolete specification ICC–108A
78.280, entire section	Revises specification ICC–103–W.
78.281, entire section	Revises specification ICC–103A–W.
78.282, entire section	Revises specification ICC–103B–W.
78.283, entire section	Revises specification ICC–103C–W.
78.284, entire section	Revises specification ICC–104–W.
78.285, entire section	Provides new specification ICC–105A100–W to replace specification ICC–104A–W.
78.286, entire section	Revises specification ICC–105A300–W.
78.287, entire section	Revises specification ICC–105A400–W.
78.288, entire section	Revises specification ICC–105A500–W.
78.289, entire section	Revises specification ICC–105A600–W.
78.290, entire section	Cancels obsolete specifications USG–A, USG–B, USG–C.
78.291, entire section	Revises specification ICC–103AL–W.
78.292, entire section	Revises specification ICC–103A–AL–W.
78.293, entire section	Revises specification ICC–110A500–W.
78.294, entire section	Provides new specification ICC–105A100AL–W to replace 104A–AL–W.
78.295, entire section	Revises specification ICC–106A800NCI.
78.296, entire section	Revises specification ICC–103B100–W.
78.297, entire section	To provide new specification ICC–103D–W.
78.298, entire section	To provide new specification ICC–103E–W.
78.299, entire section	To provide new specification ICC–103A–N–W.
78.300, entire section	To provide new specification ICC–105A300AL–W.
78.301, entire section	To provide new specification ICC–109A300–W.
Appendix A	Deleted, and to be covered in AAR rules.
Appendix B	Removal of obsolete material.
Appendix C	Lettering will be covered by AAR rules.
Appendix D	Operation of cars will be controlled by special orders.

[F. R. Doc. 56–2210; Filed, Mar. 30, 1956; 10:50 a. m.]

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Food and Drug Administration

[21 CFR Part 1]

[Docket No. FDC–62]

HYDROCORTISONE AND HYDROCORTISONE ACETATE OINTMENTS AND LOTIONS; EXEMPTION FROM PRESCRIPTION-DISPENSING REQUIREMENTS

NOTICE OF HEARING

In the matter of exempting certain drugs composed wholly or partially of hydrocortisone or hydrocortisone acetate from prescription-dispensing requirements:

The notice of proposed rule making published in the FEDERAL REGISTER on January 20, 1956 (21 F. R. 430), to transfer certain drugs containing hydrocortisone or hydrocortisone acetate from prescription to over-the-counter sale originated with proposals made in new-drug applications. Such applications have been filed by the following companies:

Bard Pharmaceuticals, Inc., 45 Sawmill River Road, Yonkers, New York.

Bryant Pharmaceutical Corporation, 633–635 Union Avenue, New York 55, New York.

Ciba Pharmaceutical Products, Inc., Summit, New Jersey.

Gray Pharmaceutical Company, Newton 58, Massachusetts.

Laboratories for Pharmaceutical Development, Inc., 45 Sawmill River Road, Yonkers, New York.

Lafayette Pharmacal, Inc., Lafayette, Indiana.

Chas. Pfizer and Company, Inc., 630 Flushing Avenue, Brooklyn, New York.

Premo Pharmaceutical Laboratories, Inc., 111 Leuning Street, South Hackensack, New Jersey.

Sharp and Dohme (Division of Merck and Company, Inc.), West Point, Pennsylvania.

Success Chemical Company, Inc., 2145 Pitkin Avenue, Brooklyn 7, New York.

The Upjohn Company, Kalamazoo, Michigan.

Whitehall Pharmacal Company, 22 East 40th Street, New York 16, New York.

Comments on and exceptions to the proposals have been received from various interested persons. In view of the comments received, the Commissioner of Food and Drugs has concluded that granting or refusing the above-mentioned proposals requires a more thorough development of the facts. Now, therefore, in accordance with section 503 (b) (3) of the Federal Food, Drug, and Cosmetic Act (52 Stat. 1051, 65 Stat. 648; 21 U. S. C. 353 (b) (3)) and the procedure outlined in 21 CFR 1.108 (c), notice is hereby given that a public hearing will be held to allow the proponents and all other interested persons to develop the facts bearing on the following questions:

1. Are ointments and lotions containing not more than 2.5 percent of hydrocortisone or hydrocortisone acetate safe for use without prescription, when applied to the skin not more than twice daily for not more than 5 days, in the relief of itching and inflammation associated with minor skin irritations?

2. Are ointments or lotions of hydrocortisone or hydrocortisone acetate safe for use without prescription under other conditions of composition and/or labeling?

3. Is a warning against use of such preparations in the presence of infection necessary for safety of use without prescription when the hydrocortisone or hydrocortisone acetate is combined with antibiotic drugs such as oxytetracycline hydrochloride or neomycin sulfate?

The hearing will commence at 10:00 o'clock in the morning of May 23, 1956, in Room 5051, Health, Education, and Welfare Building, Fourth Street and Independence Avenue SW., Washington, D. C.

Mr. Leonard D. Hardy is hereby designed as presiding officer to conduct the hearing, with full authority to administer oaths and affirmations and do all other things appropriate to the conduct of the hearing. The presiding officer is required to certify the entire record of the proceedings to the Commissioner of Food and Drugs for action on the proposal.

Dated: March 26, 1956.

[SEAL] GEO. P. LARRICK,
Commissioner of Food and Drugs.

[F. R. Doc. 56–2418; Filed, Mar. 30, 1956; 8:49 a. m.]

[21 CFR Part 120]

TOLERANCES AND EXEMPTIONS FROM TOLERANCES FOR PESTICIDE CHEMICALS IN OR ON RAW AGRICULTURAL COMMODITIES

NOTICE OF FILING OF PETITION FOR ESTABLISHMENT OF TOLERANCES FOR RESIDUES OF DDT

Pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (sec. 408 (d) (1), 68 Stat. 512; 21 U. S. C. 346a (d) (1)), the following notice is issued:

A petition has been filed by Geigy Chemical Corporation, 89 Barclay Street, New York 8, New York, proposing the establishment of a tolerance of 7 parts per million for residues of DDT in or on the following raw agricultural commodities: Sweet potatoes and the fat of cattle, goats, sheep, and swine.

The analytical method proposed in the petition for determining residues of DDT is the colorimetric method of Schechter and Haller, published in the Journal of the American Chemical Society, Volume 66, pages 2129–2130 (1944). The petition also cites a number of other references concerning analysis for DDT residues, including:

Journal of the Association of Official Agricultural Chemists, Volume 29, pages 188–218 (1946).

Journal of the Association of Official Agricultural Chemists, Volume 33, pages 880–886 (1950).

Dated: March 26, 1956.

[SEAL] GEO. P. LARRICK,
Commissioner of Food and Drugs.

[F. R. Doc. 56–2416; Filed, Mar. 30, 1956; 8:48 a. m.]

[21 CFR Part 120]

TOLERANCES AND EXEMPTIONS FROM TOLERANCES FOR PESTICIDE CHEMICALS IN OR ON RAW AGRICULTURAL PRODUCTS

NOTICE OF WITHDRAWAL OF PETITION FOR ESTABLISHMENT OF TOLERANCES FOR RESIDUES OF DIAZINON

Pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (sec. 408 (d) (1); 68 Stat. 512; 21 U. S. C. 346a (d) (1)), the following notice is issued:

In accordance with § 120.8 *Withdrawal of petitions without prejudice* of the general regulations for setting tolerances and granting exemptions from tolerances for pesticide chemicals in or on raw agricultural commodities (21 CFR 120.8; 20 F. R. 9632), Geigy Agricultural Chemicals, 62 West Second Street, Bayonne New Jersey, has withdrawn its petition for establishment of tolerances for residues of Diazinon (O,O-diethyl-O-(2-isopropyl-6-methyl-4-pyrimidinyl) thiophosphate), notice of which was published in the FEDERAL REGISTER of February 28, 1956 (21 F. R. 1292). This withdrawal is without prejudice to future filing.

Dated: March 26, 1956.

[SEAL] GEO. P. LARRICK,
Commissioner of Food and Drugs.

[F. R. Doc. 56-2417; Filed, Mar. 30, 1956; 8:49 a. m.]

[21 CFR Part 120]

TOLERANCES AND EXEMPTIONS FROM TOLERANCES FOR PESTICIDE CHEMICALS IN OR ON RAW AGRICULTURAL COMMODITIES

NOTICE OF FILING OF PETITION FOR ESTABLISHMENT OF TOLERANCES FOR RESIDUES OF SYSTOX

Pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (sec. 408 (d) (1), 68 Stat. 512; 21 U. S. C. 346a (d) (1)), the following notice is issued:

A petition has been filed by Chemagro Corporation, 101 Park Avenue, New York, New York, proposing the establishment of a tolerance of 5 parts per million for residues of Systox (O,O-diethyl-(2-ethylmercaptoethyl) thiophosphate, a mixture of thiono and thiol isomers) in or on almond hulls; a tolerance of 1.25 parts per million in or on grapes; and a tolerance of 0.75 part per million in or on almond meats, grapefruit, lemons, lettuce, pecans.

The analytical method proposed in the petition for determining residues of Systox is the method published in the FEDERAL REGISTER of April 29, 1955 (20 F. R. 2892).

Dated: March 27, 1956.

[SEAL] GEO. P. LARRICK,
Commissioner of Food and Drugs.

[F. R. Doc. 56-2419; Filed, Mar. 30, 1956; 8:49 a. m.]

NOTICES

DEPARTMENT OF THE TREASURY

Fiscal Service, Bureau of Accounts

[Dept. Circ. 570, Rev. Apr. 20, 1943, 1956, Supp. 132]

FRANKLIN NATIONAL INSURANCE CO. OF NEW YORK AND UNITED NATIONAL INDEMNITY CO.

TERMINATION OF AUTHORITY TO QUALIFY AS SURETIES ON FEDERAL BONDS

MARCH 27, 1956.

Notice is hereby given that the Certificates of Authority issued by the Secretary of the Treasury to the Franklin National Insurance Company of New York, New York, New York, and United National Indemnity Company, New York, New York, under the provisions of the act of Congress approved July 30, 1947 (U. S. Code, title 6, secs. 6-13) to qualify as sole sureties on recognizances, stipulations, bonds and undertakings permitted or required by the laws of the United States, have been revoked effective midnight December 31, 1955.

Transcontinental Insurance Company, a New York corporation, holds a certificate of authority from the Secretary of the Treasury as an acceptable surety on bonds in favor of the United States. Pursuant to Agreement of Merger, effective midnight December 31, 1955, approved by the Superintendent of Insurance of the State of New York, November 3, 1955, Franklin National Insurance Company of New York and United National Indemnity Company were merged into Transcontinental Insurance Company which is the surviving corporation. Transcontinental Insurance Company acquired all of the assets and assumed all of the liabilities of Franklin National Insurance Company of New York and United National Indemnity Company. A copy of the agreement of merger certified by the Deputy Superintendent of Insurance of the State of New York is on file in the Treasury. An underwriting limitation of $1,433,000 has been established for the surviving corporation, Transcontinental Insurance Company.

[SEAL] W. RANDOLPH BURGESS,
Acting Secretary of the Treasury.

[F. R. Doc. 56-2413; Filed, Mar. 30, 1956; 8:48 a. m.]

DEPARTMENT OF JUSTICE

Office of Alien Property

[Supplemental Vesting Order 18926; Amdt.]

AUGUST AHLSWEDE

In re: Estate of August Ahlswede, deceased, D 28-9428, E. T. Sec. 12607.

Supplemental Vesting Order 18926 dated July 2, 1952, is hereby amended as follows:

By inserting in paragraph numbered 1, thereof, immediately preceding the name "Guenther Kohlenberg" the following: "Hermann August Karl Kohlenberg, if living, or if dead, his domiciliary personal representatives, heirs at law, next of kin and distributees; the domiciliary personal representatives, heirs at law, next of kin and distributees of Karl Heinrich Wilhelm Ahlswede, deceased, and of Hertha Kohlenberg, deceased;"

All other provisions of said Supplemental Vesting Order No. 18926 and all actions taken by or on behalf of the Attorney General of the United States in reliance thereon, pursuant thereto and under the authority thereof, are hereby ratified and confirmed.

Executed at Washington, D. C., on March 28, 1956.

For the Attorney General.

[SEAL] DALLAS S. TOWNSEND,
Assistant Attorney General, Director, Office of Alien Property.

[F. R. Doc. 56-2424; Filed, Mar. 30, 1956; 8:50 a. m.]

DEPARTMENT OF COMMERCE

Maritime Administration

DETERMINATIONS OF ESSENTIALITY AND UNITED STATES FLAG SERVICE REQUIREMENTS OF TRADE ROUTE NO. 29

Notice is hereby given that the Maritime Administrator has considered the views and comments submitted by interested persons, firms and corporations with respect to his determinations regarding the essentiality and United States flag service requirements of Trade Route No. 29 as published in the FEDERAL REGISTER of August 30, 1955 (20 F. R. 6361) and, acting pursuant to section 211 of the Merchant Marine Act, 1936, as amended, has directed that the determinations with respect to said trade route as published in the above-mentioned issue of the FEDERAL REGISTER shall stand unchanged.

Dated: March 28, 1956.

By order of the Maritime Administrator.

[SEAL] A. J. WILLIAMS,
Secretary.

[F. R. Doc. 56-2414; Filed, Mar. 30, 1956; 8:48 a. m.]

DETERMINATIONS OF ESSENTIALITY AND UNITED STATES FLAG SERVICE REQUIREMENTS OF TRADE ROUTE NO. 30

Notice is hereby given that the Maritime Administrator has considered the views and comments submitted by interested persons, firms and corporations with respect to his determinations regarding the essentiality and United States flag service requirements of Trade Route No. 30 as published in the FEDERAL REGISTER of October 25, 1955 (20 F. R. 8019) and, acting pursuant to Section 211 of the Merchant Marine Act, 1936, as

amended, has directed that the determinations with respect to said trade route as published in the above-mentioned issue of the FEDERAL REGISTER shall stand unchanged.

Dated: March 28, 1956.

By order of the Maritime Administrator.

[SEAL] A. J. WILLIAMS,
Secretary.

[F. R. Doc. 56-2415; Filed, Mar. 30, 1956; 8:48 a. m.]

Office of the Secretary

GLENN R. HUGHES

STATEMENT OF CHANGES IN FINANCIAL INTERESTS

Statement of changes in financial interests required by section 710 (b) (6) of the Defense Production Act of 1950, as amended.

1. Name of appointee: Glenn R. Hughes.

2. Employing agency: Department of Commerce, Business and Defense Services Administration.

3. Date of appointment: March 24, 1955.

4. Title of position: Chief, Castings Branch, Iron & Steel Div.

5. Name of private employer: The Ohio Steel Foundry Company, Springfield, Ohio.

6. Changes in names of any corporations of which the appointee is an officer or director or within 60 days preceding appointment has been an officer or director, or in which the appointee owns or within 60 days preceding appointment has owned any stocks, bonds, or other financial interests; any partnerships in which the appointee is, or within 60 days preceding appointment was, a partner; and any other businesses in which the appointee owns, or within 60 days preceding appointment has owned, any similar interest.

A. Deletions: None.
B. Additions: None.

This supplements my statement of financial interests reported in the FEDERAL REGISTER of December 9, 1955, 20 F. R. 9165.

This statement is made as of February 1, 1956.

Dated: March 14, 1956.

GLENN R. HUGHES,

[F. R. Doc. 56-2400; Filed, Mar. 30, 1956; 8:45 a. m.]

CIVIL AERONAUTICS BOARD

[Docket No. 7511]

ROUTE RESTRICTION INVESTIGATION

NOTICE OF HEARING

Notice is hereby given, pursuant to the Civil Aeronautics Act of 1938, as amended, that a hearing in the above-entitled proceeding is assigned to be held on April 25, 1956, at 10:00 a. m., e. s. t., in Room No. E-206, Temporary Building No. 5, Sixteenth Street and Constitution Avenue NW., Washington, D. C., before Examiner John A. Cannon.

Dated at Washington, D. C., March 28, 1956.

[SEAL] FRANCIS W. BROWN,
Chief Examiner.

[F. R. Doc. 56-2427; Filed, Mar. 30, 1956; 8:51 a. m.]

[Docket Nos. 5081, 7358]

ELLIS AIR LINES, INC. AND ALASKA COASTAL AIRLINES

NOTICE OF PREHEARING CONFERENCE

In the matter of the application of Ellis Air Lines, Inc., for an amendment of its certificate of public convenience and necessity between the terminal point Ketchikan, Alaska, and certain intermediates, and the terminal point Sitka, Alaska, with respect to persons, property and mail.

In the matter of the application of Alaska Coastal Airlines for amendment of its certificate of public convenience and necessity to route consolidations and designation of Annette Island Airfield as co-terminal point.

Notice is hereby given that a prehearing conference in the above-entitled proceeding is assigned to be held on April 17, 1956, at 10:00 a. m., e. s. t., in Room E-206, Temporary Building No. 5, Seventeenth Street and Constitution Avenue NW., Washington, D. C., before Examiner Herbert K. Bryan.

Dated at Washington, D. C., March 27, 1956.

[SEAL] FRANCIS W. BROWN,
Chief Examiner.

[F. R. Doc. 56-2428; Filed, Mar. 30, 1956; 8:51 a. m.]

[Docket No. 7122]

NORTHWEST AIRLINES, INC.; SUSPENSION

NOTICE OF PREHEARING CONFERENCE

In the matter of an investigation concerning suspension of Northwest Airlines, Inc. at various points, and manner of service by North Central Airlines, Inc. between Duluth, Minnesota-Superior, Wisconsin and Chicago. See Order No. E-10103.

Notice is hereby given that a prehearing conference in the above-entitled proceeding is assigned to be held on April 16, 1956, at 10:00 a. m., e. s. t., in Room E-206, Temporary Building No. 5, Seventeenth Street and Constitution Avenue NW., Washington, D. C., before Examiner Barron Fredricks.

Dated at Washington, D. C., March 27, 1956.

[SEAL] FRANCIS W. BROWN,
Chief Examiner.

[F. R. Doc. 56-2429; Filed, Mar. 30, 1956; 8:51 a. m.]

[Docket No. 4192 et al.]

PACIFIC NORTHWEST LOCAL AIR SERVICE PATTERN

NOTICE OF PREHEARING CONFERENCE

Notice is hereby given that a prehearing conference covering the local air service pattern in the Pacific Northwest (See Order E-10100) is assigned to be held on April 18, 1956 at 10:00 a. m., e. s. t., in Room E-206, Temporary Building No. 5, Seventeenth Street and Constitution Avenue NW., Washington, D. C., before Examiner F. Merritt Ruhlen.

At this conference consideration will be given to the consolidation for hearing and decision of part or all of the following applications now pending on the docket of the Board:

Docket No.; Carrier; and Description

4192; West Coast Airlines, Inc., The Dalles, Oreg., between Portland and Medford.

3813; George W. Snyder, Jr.; Arco-Pocatello and Arco-Idaho Falls.

5463; Northwest Airlines, Inc.; Eliminate Wenatchee, Wash.

5980; Frontier Airlines, Inc.; Eliminate certain restrictions on present routes.

6293; Shelby, Mont., Chamber of Commerce; Service on Frontier's route 73.

6646; Jackson Hole, Wyo., Chamber of Commerce; Additional service by Frontier.

7016; United Air Lines, Inc.; Delete Walla Walla, the co-point Bend-Redmond and Klamath Falls on route 1.

7020; Northwest Airlines, Inc.; Eliminate Miles City, Mont.

7025; Walla Walla; Co-intermediate with Pendleton on United's route 1.

7028; Southwest Airways Company; Extend route 76 from Redding, Calif., to Klamath Falls.

7084; West Coast Airlines, Inc.; Spokane-Great Falls-Billings service. Idaho Falls-Butte.

7340; West Coast Airlines, Inc.; Klamath Falls-Reno; Reno-Boise; Klamath Falls-Boise.

7603; Western Air Lines, Inc.; Sacramento and Reno to be intermediate points on route 63 between San Francisco and Portland.

7664; Western Air Lines, Inc.; Eliminate Lewiston and the point Cutbank/Shelby.

Attention is directed to the Rule 302.12 (b) of the Board's rules of practice which specifies:

A motion to consolidate or contemporaneously consider an application with any other application shall be filed not later than the prehearing conference in the proceeding with which consolidation or contemporaneous consideration is requested, and shall relate only to a then pending application.

In order to facilitate conduct of the conference and in accord with the above rule it is requested that any party desiring to prosecute an application in this proceeding file on or before April 10, 1956, a motion for consolidation with Examiner Ruhlen and/or any new applications for which consolidation may be sought. Copies of such motions should be served on all applicants listed above.

In addition, it is requested that any "request for evidence" be transmitted to the examiner and to the party from whom the evidence is sought on or before April 10, 1956.

Counsel will be expected to state the views of their client with respect to issues discussed during the course of this conference.

Dated at Washington, D. C., March 28, 1956.

[SEAL] FRANCIS W. BROWN,
Chief Examiner.

[F. R. Doc. 56-2430; Filed, Mar. 30, 1956; 8:51 a. m.]

FEDERAL COMMUNICATIONS COMMISSION

[Docket Nos. 6584, 6585; FCC 56M-298]

ALBUQUERQUE BROADCASTING CO.

ANNOUNCEMENT WITH REFERENCE TO HEARING CONFERENCE TO BE HELD ON APRIL 4, 1956

In re applications of Albuquerque Broadcasting Company (KOB), Albuquerque, New Mexico, Docket No. 6584, File No. BMP-1738; for modification of construction permit.

Albuquerque Broadcasting Company (KOB), Albuquerque, New Mexico, Docket No. 6585, File Nos. BL-1799, BZ-1583; for license to cover construction permit as modified and authority to determine operating power by direct measurement.

At the last hearing conference in the above-entitled proceeding held on February 23, 1956, a partial report was made by an engineering expert (who had been jointly engaged by the licensees of Stations KOB, WBZ, and WABC) concerning the results of an investigation, which he was then conducting respecting the availability of so-called "representative" sites for possible directional operations of Stations KOB, WBZ, and WABC on the frequencies 1030 kc and 770 kc, respectively, in compliance with a ruling which had previously been made by the Hearing Examiner on this matter. At this conference the expert stated, however, that he had not completed his investigation of this matter and that additional time would be required for this purpose. The hearing conference was then adjourned and another conference was scheduled to be held at 2:00 o'clock p. m. on Wednesday, April 4, 1956, at Washington, D. C., for the purpose of receiving an additional report by this expert on this subject. Subsequently, however, on March 21, 1956, the Commission adopted a Memorandum Opinion and Order in which it made rulings on numerous petitions and other pleadings which had been pending before it in this proceeding and in which it deleted one of the former issues therein, modified two of such issues, and adopted six new issues to be determined therein. At the hearing conference to be held on April 4, 1956, in addition to receiving the report from the above expert concerning his investigation of possible sites, the parties should be prepared to discuss, under the issues of the proceeding as now modified, defined and amplified by the Commission, such matters as (1) admissions of fact and of documents which will avoid unnecessary proof; (2) additional stipulations; (3) the limitation on cumulative evidence; (4) narrowing the areas of proof at the hearing; (5) the number of witnesses to be presented and estimated length of testimony; and other matters which would be conducive to the expedition of the hearing. In addition, the question will be presented as to the feasibility of fixing a definite date for the taking of evidence in this proceeding.

Dated: March 27, 1956.

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] MARY JANE MORRIS,
Secretary.

[F. R. Doc. 56-2421; Filed, Mar. 30, 1956; 8:50 a. m.]

[Docket No. 8730, etc.; FCC 56M-273]

WWSW, INC., AND PITTSBURGH RADIO SUPPLY HOUSE, INC.

STATEMENT AND ORDER SCHEDULING HEARING

In re applications of WWSW, Inc., Pittsburgh, Pennsylvania, Docket No. 8730, File No. BPCT-254; Pittsburgh Radio Supply House, Inc., Pittsburgh, Pennsylvania, Docket No. 8840, File No. BPCT-345; for television construction permits.

WWSW, Inc. (WIIC) Pittsburgh, Pennsylvania, Docket No. 11644, File No. BMPCT-3486; for modification of construction permit.

A further hearing was held on the above-entitled applications of WWSW, Inc. (Docket No. 8730) and Pittsburgh Radio Supply House, Inc. (Docket No. 8840), for permits to construct a television broadcast station at Pittsburgh, Pennsylvania, on January 18, 19, 23 and 25, 1956, and the record was closed on January 25, 1956. Before closing the record, the Hearing Examiner directed that proposed findings of fact and conclusions be filed on behalf of all of the parties to the proceeding on or before March 7, 1956. On February 21, 1956, the Hearing Examiner, on his own motion, extended the date for the filing of the said proposed findings and conclusions to March 19, 1956. On March 7, 1956, the Commission adopted an order (issued March 9, 1956) designating for hearing the above-entitled application of WWSW, Inc., for modification of its construction permit (Docket No. 11644), on certain issues specified therein, in a consolidated proceeding with the applications of WWSW, Inc. (Docket No. 8730) and Pittsburgh Radio Supply House, Inc. (Docket No. 8840) for construction permits, reopened the record in Docket Nos. 8730 and 8840, for that purpose, and made Telecasting, Inc., a party to the proceeding. In this order the Commission announced that the time and place of the consolidated hearing would be specified in a subsequent order.

On March 16, 1956, a pre-hearing conference in the above-entitled proceeding was held before the presiding Hearing Examiner, which was attended by counsel for all of the parties thereto. This pre-hearing conference had been called for the purpose of attempting to arrive at stipulations between the parties and to establish procedures conducive to the expedition of the hearing, and to set the date for the taking of testimony therein.

At this pre-hearing conference the parties agreed to stipulate that WWSW, Inc. is the owner of the land on which the studio specified in its construction permit is proposed to be built. It was further agreed between the parties that an inspection of the building in which the proposed studio is to be located would be made by representatives of Telecasting, Inc. prior to the date of the hearing, for the purpose of determining from such inspection the extent to which construction of the studio facilities may have been completed. In this connection, it was further agreed that representatives of WWSW, Inc. would also be present during the course of this inspection and that staff representatives of the Commission would be invited to participate therein. It was then determined that the inspection would be made on April 4, 1956. Counsel for WWSW stated on the record that he is willing to concede and to stipulate certain facts concerning the extent to which construction has been completed with regard to the proposed studio facilities and that he plans to offer in evidence a group of photographs of the building and premises. Counsel for Telecasting, Inc. stated that he could not stipulate with reference to the facts outlined by counsel for WWSW, Inc., or as to the accuracy and completeness of the photographs in question, until after an inspection has been made of the premises. He agreed, however, to attempt to reach stipulations with the applicant and other parties prior to the hearing with reference to these facts and the proposed photographs if he is satisfied after the said inspection that they accurately and completely portray the construction involved. Counsel for WWSW, Inc. further agreed that if the representatives of Telecasting, Inc. are not satisfied respecting the completeness and accuracy of the said photographs, which he proposes to make available to them prior to the inspection of the premises, permission will be given to that party to take its own photographs within 48 hours after the said inspection.

Counsel for Telecasting, Inc., requested on the record that the applicant be required to furnish him with its interoffice correspondence, memoranda, and all other private communications since June 2, 1955, involving decisions made by that party respecting the proposed change in studios, the engineering work performed in June, 1955, and the reduction in capital expenditures involved in the cost of the said studios. This request was denied by the Hearing Examiner on the grounds that it was irrelevant and lacking in specificity.

The Hearing Examiner ruled that the Proposed Findings of Fact and Conclusions on the hearing record in Dockets No. 8730 and 8840 would not be required to be filed on March 19, 1956, as previously specified, due to the fact that the said proceeding has been reopened and consolidated with the hearing in Docket No. 11644.

After a full discussion on the subject, the date for the taking of testimony in the instant consolidated proceeding was scheduled for Wednesday, April 11, 1956.

Accordingly, it is ordered, This 21st day of March 1956, that the course of the hearing in the above-entitled pro-

ceeding shall be governed by the determinations and rulings set forth above unless the same shall be subsequently modified by the Hearing Examiner or the Commission for good cause shown.

It is further ordered, That the taking of testimony in the above-entitled proceeding shall commence on Wednesday, April 11, 1956, at 10:00 o'clock a. m., in the offices of this Commission, Washington, D. C.

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] MARY JANE MORRIS,
Secretary.

[F. R. Doc. 56-2406; Filed, Mar. 30, 1956; 8:47 a. m.]

[Docket No. 11412; FCC 56M-281]

WJR, THE GOODWILL STATION, INC.

ORDER CONTINUING HEARING

In re application of WJR, The Goodwill Station, Inc., Flint, Michigan, Docket No. 11412, File No. BMPCT-2689; for modification of construction permit.

The Hearing Examiner having under consideration a motion filed by the protestants Lake Huron Broadcasting Corporation, Inland Broadcasting Company, and Sparton Broadcasting Company on March 22, 1956, for continuance of the further hearing now scheduled for March 28, 1956, to April 2, 1956;

It appearing that all parties have agreed to the immediate consideration of the motion; and to the proposed continuance upon the following understanding:

(a) The presentation of protestants' evidence pursuant to the Commission's order of March 9, 1956, remanding the proceeding for further hearing will be completed on April 2, 1956, and the record will be closed on that day;

(b) Protestants will present one and not more than two witnesses, that is, the present manager of Station WTOM-TV or other person now connected with the station, and possibly the former manager of the station;

(c) Copies of any exhibits will be made available to other counsel on March 29 or 30, 1956;

It is ordered, This 23d day of March 1956, that the motion is granted, and the hearing now scheduled for March 28, 1956, is continued to April 2, 1956, at 10:00 a. m., in the offices of the Commission, Washington, D. C., on the foregoing understanding.

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] MARY JANE MORRIS,
Secretary.

[F. R. Doc. 56-2407; Filed, Mar. 30, 1956; 8:47 a. m.]

[Docket No. 11520; FCC 56M-296]

WESTERN OHIO BROADCASTING CO., INC.

ORDER CONTINUING HEARING

In re application of Western Ohio Broadcasting Co., Inc., Greenville, Ohio, Docket No. 11520, File No. BP-9888; for construction permit.

The Hearing Examiner having under consideration an oral request for a continuance in this proceeding;

It appearing that a conference was held on March 26, 1956, attended by counsel for all parties and by the Hearing Examiner, at which time questions relating to the form and exchange of exhibits were discussed; and

It further appearing that owing to the schedule agreed upon by all the parties with the Hearing Examiner's consent a continuance of the date for commencing hearing is required; and

It further appearing that a second prehearing conference was determined to be necessary and that such conference will be held on April 25, 1956, at 2:00 p. m.;

It is ordered, This 27th day of March 1956, that the hearing now scheduled to commence on April 2, 1956, is continued to April 26, 1956, at 10:00 a. m. in Washington, D. C.

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] MARY JANE MORRIS,
Secretary.

[F. R. Doc. 56-2422; Filed, Mar. 30, 1956; 8:50 a. m.]

[Docket No. 11600; FCC 56M-294]

TWIN-CITY BROADCASTING CO., INC.

ORDER CONTINUING HEARING

In re application of Twin-City Broadcasting Company, Inc., Shreveport, Louisiana, Docket No. 11600, File No. BP-10032; for construction permit.

All participants in the proceedings have consented, hearing in the above-entitled matter is continued, on the Hearing Examiner's own motion, from March 28, 1956, to 10:00 a. m., Wednesday, April 4, 1956, in Washington, D. C.

Dated: March 26, 1956.

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] MARY JANE MORRIS,
Secretary.

[F. R. Doc. 56-2408; Filed, Mar. 30, 1956; 8:47 a. m.]

[Docket No. 11653]

WILLIAM D. WALKER

ORDER TO SHOW CAUSE

In the matter of William D. Walker, Gulf Breeze, Florida, Docket No. 11653; order to show cause why the license for radiotelephone station WF-2960 should not be revoked.

There being under consideration the matter of certain alleged violations of the Commission's rules in connection with the operation of Station WF-2960 located aboard the vessel "Gulf Mistress" and licensed to William D. Walker, Gulf Breeze, Florida;

It appearing that notices of violations of the Commission's rules were given the licensee as follows:

(a) Notice dated September 14, 1955, stating that on September 12, 1955, the licensee had violated the following Commission rules:

(1) Section 8.108 by transmitting on 2638 kcs so as to cause radiation of second harmonics;

(2) Section 364 (a) for failure to announce the assigned call sign at the beginning and conclusion of communications;

(b) Notice dated January 20, 1956, sent by Registered Mail, Return Receipt Requested, which was received by the licensee on January 26, 1956, calling attention to the aforementioned violations and also the further violation of § 8.601 (a) of the Commission's rules for failure to reply thereto. This notice requested a response within ten days of receipt.

It further appearing that on October 12, 1955, the licensee transmitted on 2830 kc so as to cause second harmonic emissions in violation of § 8.108 of the Commission's rules;

It further appearing that the licensee's failure to file the proper certification for transmission on the frequency 2830 kc is a violation of § 8.351 (d) of the Commission's rules;

It further appearing that as of this date the licensee has not answered the above-mentioned Official Violation Notices;

It is ordered, This 26th day of March 1956, pursuant to section 312 (c) of the Communications Act of 1934, as amended, that the said William D. Walker show cause why the aforesaid license should not be revoked and appear and give evidence in respect thereto at a hearing[1] to be held before this Commission at Washington, D. C., on the 6th day of June 1956;

It is further ordered, That the Secretary send a copy of this Order by Registered Mail—Return Receipt Requested to the said William D. Walker, Gulf Breeze, Florida.

Released: March 27, 1956.

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] MARY JANE MORRIS,
Secretary.

[F. R. Doc. 56-2409; Filed, Mar. 30, 1956; 8:47 a. m.]

[1] Section 1.402 of the Commission's rules provides that in order to have the opportunity to appear before the Commission at the time and place specified in an order to show cause, a licensee shall within thirty (30) days from the date of the receipt of a show cause order submit a written statement informing the Commission whether said licensee will appear at the designated hearing and present evidence upon the matters specified, or whether the rights to such a hearing are waived. Waiver of the hearing may be accompanied by a statement setting forth the reasons why the licensee believes that an order of revocation should not be issued. A waiver unaccompanied by such a statement will be deemed to be an admission of the allegations specified in the order to show cause. Failure to respond to a show cause order within the above-mentioned thirty (30) day period, or, having informed the Commission in writing within the above-mentioned thirty (30) day period that the licensee will appear at the hearing and present evidence upon the matter specified and then failing to appear at the hearing, will be deemed to be a waiver of the right to a hearing and an admission of the allegations specified in the order to show cause.

[Docket No. 11658; FCC 56M-290]

DOROTHY J. LAIRD

ORDER SCHEDULING HEARING

In re application of Dorothy J. Laird (WDUX), Waupaca, Wisconsin, Docket No. 11658, File No. BMP-7086; for modification of construction permit.

It is ordered, This 23d day of March 1956, that James D. Cunningham will preside at the hearing in the above-entitled proceeding which is hereby scheduled to commence on May 28, 1956, in Washington, D. C.

Released: March 26, 1956.

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] MARY JANE MORRIS,
Secretary.

[F. R. Doc. 56-2410; Filed, Mar. 30, 1956; 8:47 a. m.]

[Docket No. 11661; FCC 56-267]

WRATHER-ALVAREZ BROADCASTING, INC.

MEMORANDUM OPINION AND ORDER DESIGNATING APPLICATION FOR HEARING ON STATED ISSUES

In re application of Wrather-Alvarey Broadcasting, Inc., Yuma, Arizona, Docket No. 11661, File No. BPCT-2039; for a construction permit for a new television broadcast station.

1. The Commission has before it for consideration (a) a "Protest and Petition for Stay", filed on February 24, 1956, pursuant to section 309 (c) of the Communications Act of 1934, as amended, by Valley Telecasting Company (Valley), permittee of television station KIVA, Channel 11, Yuma, Arizona, and directed against the Commission's action of January 25, 1956, granting without hearing the above-entitled application of Wrather-Alvarez Broadcasting, Inc. (Wrather-Alvarez) for a construction permit for a new television broadcast station to operate on Channel 13 at Yuma, Arizona; (b) an "Opposition to Protest and Petition for Stay", filed on March 12, 1956, by Wrather-Alvarez; and (c) a "Reply" by Valley filed on March 16, 1956. The protestant has an application for license pending before the Commission, and is currently operating under program test authority with visual effective radiated power of 29 kw and an antenna height of 444 feet above average terrain.

2. Protestant claims standing as a "party in interest" under section 309 (c) of the Communications Act of 1934, as amended, by virtue of its status as the permittee of television station KIVA in Yuma. It alleges, in support of its claim to standing, that it has suffered operating deficits for a period of 26 months, and has operated profitably only in October and November 1955; that the revenues available in the Yuma area will not support two television stations; that the addition of a second station in Yuma will result in a division of available and potential revenues, network programs and audience between the two stations and that it will, therefore, suffer economic hardship and injury because of the grant protested.

3. In support of its protest and request for stay, the protestant alleges, in substance, that although Wrather-Alvarez has proposed regularly scheduled local live programming from a variety of sources and has estimated $400,000 in annual revenues, it has not shown that it can provide the programming it has proposed or realize the revenues it has estimated; that the advent of a second station in Yuma threatens the financial existence of both, because Yuma cannot support two television stations; and that, as a consequence, the programming of both stations will deteriorate and both stations compelled to discontinue operation. The protestant alleges that it has convassed the Yuma area and has learned that none of the various potential sources of local and public service programming have been contacted by Wrather-Alvarez. With respect to the ability of Yuma to support two television stations, the protestant has furnished an economic study prepared by a management consultant in which it is concluded that the establishment of a second television station in Yuma will ultimately lead to the financial failure of either KIVA or the proposed new station, or both; that prior to such failure, both stations would be forced to curtail expenditures for programming, thus causing deterioration of programming; and that neither station, because of the division of the viewing audience, would be able to obtain and offer the viewers the popular network programs which are offered on a commercial basis. Accordingly, the protestant requests that the Commission set aside the grant of the above-entitled application, designate the application for hearing on the issues specified by it and such other issues as the Commission may feel to be proper, make the protestant a party to such hearing, and stay the effectiveness of the construction permit pending a final decision in the matter.

4. The protestant has specified the following issues:

1. To determine the availability of the program sources for the programs proposed by Wrather-Alvarez.

2. To determine whether the Yuma market will provide sufficient revenues to the proposed station so as to permit the applicant to adequately serve the public.

3. To determine whether the advertising potential of the Yuma market is such as may indicate that both stations, the existing and proposed, will be deleted with the result that the listening public will be left without any television service at all.

4. To determine whether the advertising potential of the Yuma market is so slight that by a division of the field both stations, the existing and the proposed, will be compelled to render inadequate service.

5. To determine whether, considering the above issues, a grant of the application will serve the public interest, convenience and necessity.

5. In its opposition, Wrather-Alvarez alleges, in substance, that the facts alleged by the protestant in support of its issue on programming are not adequate to raise that issue because of failure to allege that program sources listed are in fact unavailable; that, in any event, the facts alleged in support of the issue do not constitute grounds for denial of the grant; that, with respect to the economic issues, the protestant has excluded from its economic study in support of such issues substantial population areas which Wrather-Alvarez intends to serve; that such economic study is deficient in that the protestant has failed to consider the economy of the Yuma television market or even adequately to define such area; that the data furnished by the protestant fail to take into consideration current facts as to television set circulation and the size of the potential audience within the Grade B contours of the proposed and existing stations; that the protestant has arbitrarily confined its study to Yuma and Yuma County and has based its contentions solely upon its experience as related to the arbitrarily limited statistics concerning the Yuma market; and that even if the protestant were to prove each of the facts upon which it relies, it will have failed to show that the television market in the Yuma region cannot support two television stations. On the basis of the foregoing, Wrather-Alvarez urges that the protest should be denied. Finally, Wrather-Alvarez takes no position with respect to the protestant's request for stay, but asks that in the event the protest is granted the Commission affirmatively grant a waiver of § 3.626 of its rules which requires that construction be undertaken within 60 days following the grant of permit and be completed within the six months thereafter.

6. In its reply, the protestant contends that although there is no formal requirement in the application form that commitments for programming be included, there is an implication in the submission of a proposed program schedule that an applicant has studied the needs of the area; and that since the program schedule has been challenged, the burden of proceeding with the evidence on the programming issue should be on the grantee. With respect to the economic issues the protestant urges that "every economic allegation relied upon by the opposition is untrue and unfounded", and submits comments on the grantee's opposition by the consultant who prepared protestant's economic study. Finally, the protestant agrees to a waiver of § 3.626 of the rules.

7. With respect to issue "1" relating to programming, the protestant relies on allegations that Wrather-Alvarez has not approached the various sources of local and public service programming in Yuma to ascertain the availability of the local programming it proposes. With respect to the economic issues "2", "3" and "4", the protestant relies on a study of the economic potentialities of the Yuma area (that area within the computed A and B field intensity contours of the proposed new station) which concludes (on the bases of the past and current earnings of the protestant's station, various economic indices, and comparison with the smallest single-station and two-station markets in the United States) that the revenues predicted by Wrather-Alvarez are unrealistic and that two competing television stations could not survive in the Yuma market, or, if

they survived, could offer only inferior service. Wrather-Alvarez, in its opposition, contests these allegations and questions the accuracy and adequacy of the economic data relied on by the protestant.

8. In view of the circumstances that the protestant is the permittee of television broadcast station KIVA in Yuma, Arizona, which is currently in operation, that the protestant's station and the permittee's proposed station will compete for advertising revenues, programming and audience, and that the protestant has alleged that it will suffer economic injury as a result of the grant complained of, we find the protestant to be a "party in interest" within the meaning of section 309 (c) of the Communications Act of 1934, as amended. Federal Communications Commission v. Sanders Brothers Radio Station, 309 U. S. 470 (9 Pike and Fischer RR 2008). We find, further, that the protestant has met the requirement of specifying with particularity the facts relied upon in support of its protest and that they are not of a sham or frivolous nature. Accordingly, the Commission is designating the application for evidentiary hearing on the issues framed by the protestant. Retention of issues "2", "3" and "4" in hearing does not constitute a determination that the competitive effect of the grantee's proposed station is a material consideration. This question will be resolved in the hearing process. The Commission is adopting issue "1", since the grantee is in a better position to shoulder the burden of showing the availability of program sources, for the programs it has proposed. The other issues are not being adopted, and the burden of proceeding with the introduction of evidence and the burden of proof on each of these issues will, therefore, be on the protestant.

9. The protestant has requested that the effective date of the grant of the subject application be postponed until a decision is handed down after a hearing on this matter. Section 309 (c) now provides that "the effective date of the Commission's action shall be postponed unless the Commission affirmatively finds for reasons set forth in the decision that the public interest requires that the grant remain in effect, in which event the Commission shall authorize the applicant to utilize the facilities or authorization in question pending the Commission's decision after hearing." In amending section 309 (c), the Congress indicated that the Commission in exercising its discretion should consider two factors—the need for the new service and the likelihood that the grant in question would ultimately have to be set aside.[1]

10. We are of the view that there is need for the new service proposed by the grantee. Yuma has a population of 9,145 (1950 census) and is the county seat of Yuma County, which has a population of 28,006 (1950 census). Further, the grantee alleges that the proposed operation will provide "a signal of commercial significance" to the Imperial Valley region including the cities of Brawley, Imperial, El Centro, Calexico, Mexicali (Mexico) and Holtville, which have a total population in excess of 150,000. The Yuma area receives service from only one existing station, KIVA, the protestant's station, which has been on the air since October 8, 1953. KIVA currently operates from 12 noon to 12 midnight and schedules about 33 hours a week from all three national networks. The protestant states that it has not been able to obtain a substantial amount of local live programming, but has not turned down any request for free time for "public service" programs. Protestant does not indicate, however, that it has affirmatively attempted to obtain such programming.[2] The grantee proposes to broadcast 56 hours per week, using live talent 34 percent of the time, and having 14 hours per week (11 percent) of local live programming, a substantial proportion of which will consist of educational and religious programs. The grantee states in its opposition that it will affirmatively seek the participation and cooperation of public service organizations. The grantee also proposes to seek a CBS network affiliation. Thus, the grantee proposes to afford the Yuma area a choice, for the first time, both of local live and network programs. In view of the above, it appears that the proposed operation would fulfill a significant need for local and area service by providing additional time for local charitable, educational, religious and civic programs, as well as a choice of all types of programs to the Yuma area. In addition, we believe it is reasonable to presume, where there is only one local service, that a definite need exists for a second medium of local expression. Viewer opportunity to select among locally-originated programs, the availability to civic authorities, public service organizations and others of more than one television medium, and the competitive stimulus provided by a second station are all needs which remain unsatisfied in single-station communities.

11. We have, as required by revised section 309 (c), balanced this demonstrable need of the Yuma area for new television service against the likelihood that the grant in question will have to be set aside after the hearing here ordered. While, of course, we cannot now state what our conclusions will be in the light of the hearing record, we do not believe, on the basis of its pleadings, that protestant has made a prima facie case that the grant is not in the public interest. We doubt, even if it were to be shown that the grantee was overly optimistic in its local live program proposals, whether this fact on the alleged lack of contacts makes the grant contrary to the public interest. And we think, in view of the admitted fact that the Yuma area can support at least one television station, and the basic competitive nature of the broadcasting regulatory scheme, that there is little likelihood that protestant can prevail on the economic issues, even if we were to find Yuma cannot support two stations. See Voice of Cullman, 6 Pike and Fischer RR 161.

12. In light of the foregoing, we affirmatively find that the public interest requires that the grant remain in effect. In view of this finding, we must deny the waiver of § 3.626 of the rules which has been requested by Wrather-Alvarez. Any request by the grantee under that section for extension of time in which to complete construction of its station will, of course, be considered on its merits and in accordance with established Commission policy.

13. In view of the foregoing: *It is ordered,* That the subject Protest is granted; That the Petition for Stay is denied and the grantee is authorized to utilize its construction permit; and that, pursuant to section 309 (c) of the Communications Act of 1934, as amended, the above-entitled application is designated for hearing at the offices of the Commission in Washington, D. C., on the following issues:

(a) To determine the availability of the program sources for the programs proposed by Wrather-Alvarez.

(b) To determine whether the Yuma market will provide sufficient revenues to the proposed station so as to permit the applicant to adequately serve the public.

(c) To determine whether the advertising potential of the Yuma market is such as may indicate that both stations, the existing and the proposed, will be deleted with the result that the listening public will be left without any television service at all.

(d) To determine whether the advertising potential of the Yuma market is so slight that by a division of the field both stations, the existing and the proposed, will be compelled to render inadequate service.

(e) To determine whether, considering the above issues, a grant of the application will serve the public interest, convenience and necessity.

It is further ordered, That the burden of proceeding with the introduction of evidence and the burden of proof as to issue (a) above shall be on the grantee, and shall be on the protestant with respect to each of the remaining issues.

It is further ordered, That the protestant and the Chief of the Broadcast Bureau are hereby made parties to the proceeding herein and that:

(a) The hearing on the above issues shall commence at 10 a. m. on May 23, 1956, before an Examiner to be specified at a later date;

(b) The parties to the proceeding herein shall have fifteen (15) days after the issuance of the Examiner's decision to file exceptions thereto and seven (7)

[1] See 1 Pike and Fischer RR 10:373, Senate Report accompanying H. R. 5614 amending section 309 (c).

[2] Network and programming data for the protestant's station were obtained from statements by the protestant contained in the protest.

days thereafter to file replies to any such exceptions; and

(c) The appearances by the parties intending to participate in the above hearing shall be filed not later than May 16, 1956.

It is further ordered, That the request of Wrather-Alvarez Broadcasting, Inc. for a waiver of § 3.626 of the Commission's rules and regulations is denied.

Adopted: March 26, 1956.

Released: March 26, 1956.

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] MARY JANE MORRIS,
Secretary.

[F. R. Doc. 56-2423; Filed, Mar. 30, 1956; 8:50 a. m.]

[Change List 100]

CANADIAN BROADCAST STATIONS

LIST OF CHANGES, PROPOSED CHANGES AND CORRECTIONS IN ASSIGNMENTS

FEBRUARY 20, 1956.

Notification under the provisions of Part III, section 2 of the North American Regional Broadcasting Agreement.

List of changes, Proposed changes and Corrections in Assignments of Canadian Broadcast Stations Modifying Appendix containing assignments of Canadian Broadcast Stations (Mimeograph 47214-3) attached to the Recommendations of the North American Regional Broadcasting Agreement Engineering Meeting January 30, 1941.

Call letters	Location	Power	Antenna	Schedule	Class	Probable date of change or commencement of operation
		730 kilocycles				
New	Brandon, Manitoba	10 kw	DA-2	U	II	Jan. 15, 1957
New	Lethbridge, Alberta	1 kw	ND	D	II	Feb. 15, 1957

FCC NOTE: Canadian Change List No. 99 had not been received at the time List Number 100 was transcribed.

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] MARY JANE MORRIS,
Secretary.

[F. R. Doc. 56-2411; Filed, Mar. 30, 1956; 8:47 a. m.]

SECURITIES AND EXCHANGE COMMISSION

[File No. 70-3452]

DUQUESNE LIGHT CO.

ORDER AUTHORIZING ISSUE AND SALE OF PRINCIPAL AMOUNT OF BONDS PURSUANT TO COMPETITIVE BIDDING

MARCH 27, 1956.

Duquesne Light Company ("Duquesne"), a public-utility subsidiary of Standard Power and Light Corporation, a registered holding company, has filed with this Commission an application and amendments thereto pursuant to section 6 (b) of the Public Utility Holding Company Act of 1935 ("act") and Rule U-50 thereunder with respect to the following proposed transaction:

Duquesne proposes to issue and sell, subject to the competitive bidding requirements of Rule U-50, $20,000,000 principal amount of its First Mortgage Bonds, __ percent Series due April 1, 1986. The interest rate (which shall be a multiple of ⅛ of 1 percent) and the price, exclusive of accrued interest, to be paid to Duquesne for the new bonds (which shall be not less than 100 percent nor more than 102¾ percent of the principal amount) will be determined by competitive bidding. The new bonds will be issued pursuant to a Trust Indenture, dated August 1, 1947, between Duquesne and Mellon National Bank and Trust Company, as Trustee, as heretofore supplemented and as to be further supplemented by a new Twelfth Supplemental Trust Indenture to be dated as of April 1, 1956.

Duquesne proposes to use the net proceeds from the sale of the new bonds for the purpose of financing construction expenditures.

The application, as amended, states that the issue and sale of the bonds are solely for the purpose of financing the business of Duquesne and have been expressly authorized by the Pennsylvania Public Utility Commission in which State Duquesne is organized and doing business. The filing also states that total expenses of Duquesne in connection with the proposed transaction are estimated not to exceed $92,000. Legal fees and expenses of Reed, Smith, Shaw & McClay, counsel for Duquesne, are estimated at $12,500 and $1,644, respectively. In addition, the legal fees and expenses of Cahill, Gordon, Reindel & Ohl, counsel for the underwriters, to be paid by the successful bidders, are estimated not to exceed $6,500 and $200 (exclusive of Blue Sky disbursements), respectively. Duquesne requests that the Commission's order herein become effective forthwith upon issuance.

Due notice having been given of the filing of said application, and a hearing not having been requested of or ordered by the Commission, and the Commission finding with respect to the proposed transaction that the applicable provisions of the act and the rules thereunder are satisfied and deeming it appropriate in the public interest and in the interest of investors and consumers that the application, as amended, be granted and that such order become effective forthwith:

It is ordered, Pursuant to Rule U-23 and the applicable provisions of the act, that said application, as amended, be, and it hereby is, granted forthwith, subject to the conditions prescribed in Rules U-50 and U-24.

By the Commission.

[SEAL] ORVAL L. DUBOIS,
Secretary.

[F. R. Doc. 56-2401; Filed, Mar. 30, 1956; 8:45 a. m.]

[File No. 70-3455]

AMERICAN GAS AND ELECTRIC CO.

ORDER PERMITTING DECLARATION TO BECOME EFFECTIVE REGARDING ISSUANCE AND DELIVERY OF ADDITIONAL SHARES OF COMMON STOCK TO COMMON STOCKHOLDERS AND AMENDMENT OF CERTIFICATE OF INCORPORATION

MARCH 27, 1956.

American Gas and Electric Company ("American Gas"), a registered holding company, has filed a declaration and an amendment thereto with this Commission pursuant to sections 6 (a), 7, and 12 (e) of the Public Utility Holding Company Act of 1935 ("act") and Rule U-62 promulgated thereunder regarding the following proposed transactions:

American Gas has now outstanding 13,110,108 shares of common stock, par value $5 per share. The aggregate amount in the common capital stock account of American Gas is $65,550,540. The capital surplus-premium on common stock account of American Gas is stated at $90,550,020. The earned surplus account of American Gas is stated at $78,634,761. All of the foregoing amounts are as of December 31, 1955, and reflect a 2 percent stock dividend declared in 1955 for payment in 1956.

It is proposed that an amount of $65,550,540 (or $5 per share for each of the 13,110,108 outstanding shares) will be transferred from the capital surplus-premium on common stock account to the common capital stock account. It is also proposed that the par value of the common stock will be changed from $5 to $10 per share and that the number of authorized shares of common stock will be increased from 20,082,162 to 25,000,000.

It is further proposed that each of the presently outstanding 13,110,108 shares of common stock of American Gas will be changed and converted into 1½ shares of common stock and that, in connection therewith, the remaining balance of $24,999,480 in the capital surplus-premium on common stock account and $40,551,060 in the earned surplus account of American Gas, or an aggregate of $65,550,540 (or $10, the par value, for each of the additional 6,555,054 shares) will be transferred to the common capital stock account.

After giving effect to the above proposed transactions, American Gas will have a total of 19,665,162 shares of common stock, of the par value of $10 per share, issued and outstanding. The aggregate amount recorded in its common capital stock account will be $196,651,620. All of the capital surplus, now amounting to $90,550,020, will be elimi-

nated and the earned surplus, which amounted to $78,634,761, as of December 31, 1955, will be reduced by $40,551,060.

The stockholders of American Gas will be solicited to approve the change of the par value of the common stock from $5 to $10 per share, the conversion of each share of outstanding $5 par value common stock into 1½ shares of $10 par value common stock, and the increase in the number of authorized shares of common stock from 20,082,162 to 25,000,000. If the requisite authorizations of the stockholders are secured, a certificate of amendment of the certificate of incorporation of American Gas will be filed in the office of the Department of State of the State of New York on May 17, 1956. As a result of such action, the transaction will become effective at the close of business on May 17, 1956, and (a) thereafter each outstanding certificate for $5 par value common stock automatically will represent the same number of shares of the $10 par value common stock, without surrender thereof by the stockholder, and (b) as soon as is practicable thereafter, the Company will mail to stockholders certificates representing their additional shares of the $10 par value common stock.

No fractional shares will be issued in connection with the proposed transactions. In lieu thereof, American Gas proposes to mail to each stockholder of record on May 17, 1956, who would otherwise be entitled to a fractional share, a letter advising that arrangements have been made with Guaranty Trust Company of New York, Agent, pursuant to which such holder will be entitled during a period of 21 days to instruct the Agent to take within such period either of the following courses of action with respect to the fractional interest to which such holder would otherwise be entitled: (1) to consolidate such fractional interest into one full share of common stock upon payment by such holder to the Agent of the cost of the additional fractional interest required to effect such consolidation, or (2) to sell such fractional interest on behalf of such holder. The letter will further advise that if the Agent shall not have received any instructions from such holder prior to the expiration of such period the fractional interest to which such holder would otherwise be entitled will be sold for the account of such holder. Cash proceeds received by the Agent in respect of fractional interests which are sold will be remitted to the stockholders entitled thereto.

Fees and expenses of American Gas in connection with the proposed transactions are estimated by the company as follows:

Federal issuance stamp taxes	$75,000
New York State authorization fee	75,000
New York Stock Exchange initial listing fee	16,650
Legal fees of Simpson, Thacher & Bartlett, counsel to American Gas	7,500
Printing Form U–1, Stock Exchange listing application, letters of transmittal, fractional interest forms, etc	3,500
Printing and engraving stock certificates	18,000
Charges and expenses of Guaranty Trust Company of New York:	
As transfer agent re: issuance of certificates resulting from charter amendment, including issuance of certificates resulting from combination of fractional interests	65,000
As agent for handling fractional interest cards, combining fractional interests, etc	20,000
Out-of-pocket expenses as transfer agent and agent for postage, mailing, envelopes, insertions, etc	11,000
Registrar fees—Irving Trust Co	20,000
Miscellaneous	1,000
Total	312,650

No State or Federal regulatory agency, other than this Commission, has jurisdiction over any of the proposed transactions.

Notice of said filing having been duly given in the manner prescribed by Rule U-23 and no hearing having been requested of or ordered by the Commission; and the Commission finding that the applicable provisions of the act and of the rules promulgated thereunder are satisfied, that the fees and expenses set forth above are not unreasonable, and that the declaration as amended should be permitted to become effective:

It is ordered, Pursuant to Rule U-23 and the applicable provisions of said act, that said declaration as amended be, and the same hereby is, permitted to become effective forthwith, subject to the terms and conditions prescribed in Rule U-24.

By the Commission.

[SEAL] ORVAL L. DUBOIS,
Secretary.

[F. R. Doc. 56–2402; Filed, Mar. 30, 1956; 8:46 a. m.]

FEDERAL POWER COMMISSION

[Docket No. E–6671]

SIERRA NEVADA POWER CO.

NOTICE OF APPLICATION

MARCH 29, 1956.

Take notice that on March 28, 1956, an application was filed with the Federal Power Commission, pursuant to section 204 of the Federal Power Act, by Sierra Nevada Power Co. ("Applicant"), a corporation organized under the laws of the State of Nevada and doing business in the State of Nevada, with its principal business office at Las Vegas, Nevada, seeking an order authorizing the issuance of $2,500,000 First Mortgage Bonds, 4¼ Percent Series B due 1984, and the extension of short-term banknotes presently outstanding in the aggregate principal amount of $5,000,000.

Applicant proposes to issue and sell the bonds to the holders of bonds of Applicant now outstanding or to other institutional investors and Applicant requests that the proposed issuances of bonds be exempted from the Commission's competitive bidding rule.

Any person desiring to be heard or to make any protest with reference to said application should, on or before the 12th day of April 1956, file with the Federal Power Commission, Washington 25, D. C., a petition or protest in accordance with the Commission's rules of practice and procedure. The application is on file and available for public inspection.

[SEAL] J. H. GUTRIDE,
Acting Secretary.

[F. R. Doc. 56–2466; Filed, Mar. 30, 1956; 8:54 a. m.]